

TARGETED DRAINAGE REPORT

Wellington Hills-240th St SE Improvements

**RR9322
UPI# 12-0059-1**

December 16, 2013



***ENGINEERING SERVICES
Snohomish County Public Works***



DRAINAGE INFORMATION SUMMARY FORM

Project Name: Wellington Hills-240th St SE Improvements RR#9322 UPI#12-0059-1

Project Engineer: Brook Chesterfield

Project Applicant: Snohomish County Public Works Engineering Services

Project Total Area: 3.39 Acres

Project Development Area: 1.16 Acres

Summary Table

Drainage Basin Information		
		TDA 4
On-Site Sub-basin Area (acres)		0.40 acres
Type of Storage Proposed		Detention Vaults/Pipe**
Approx. Storage Volume (cu. ft.)		See Below**
Soil Type(s)		C
*Pre-developed Runoff Rates		
Q (cfs.)	2 yr.	0.007 cfs
	10 yr.	0.017 cfs
	100 yr.	0.030 cfs
*Post-development Runoff Rates		Before / After Controlling
Q (cfs.)		
	2 yr.	See Below**
	10 yr.	See Below**
	100 yr.	See Below**

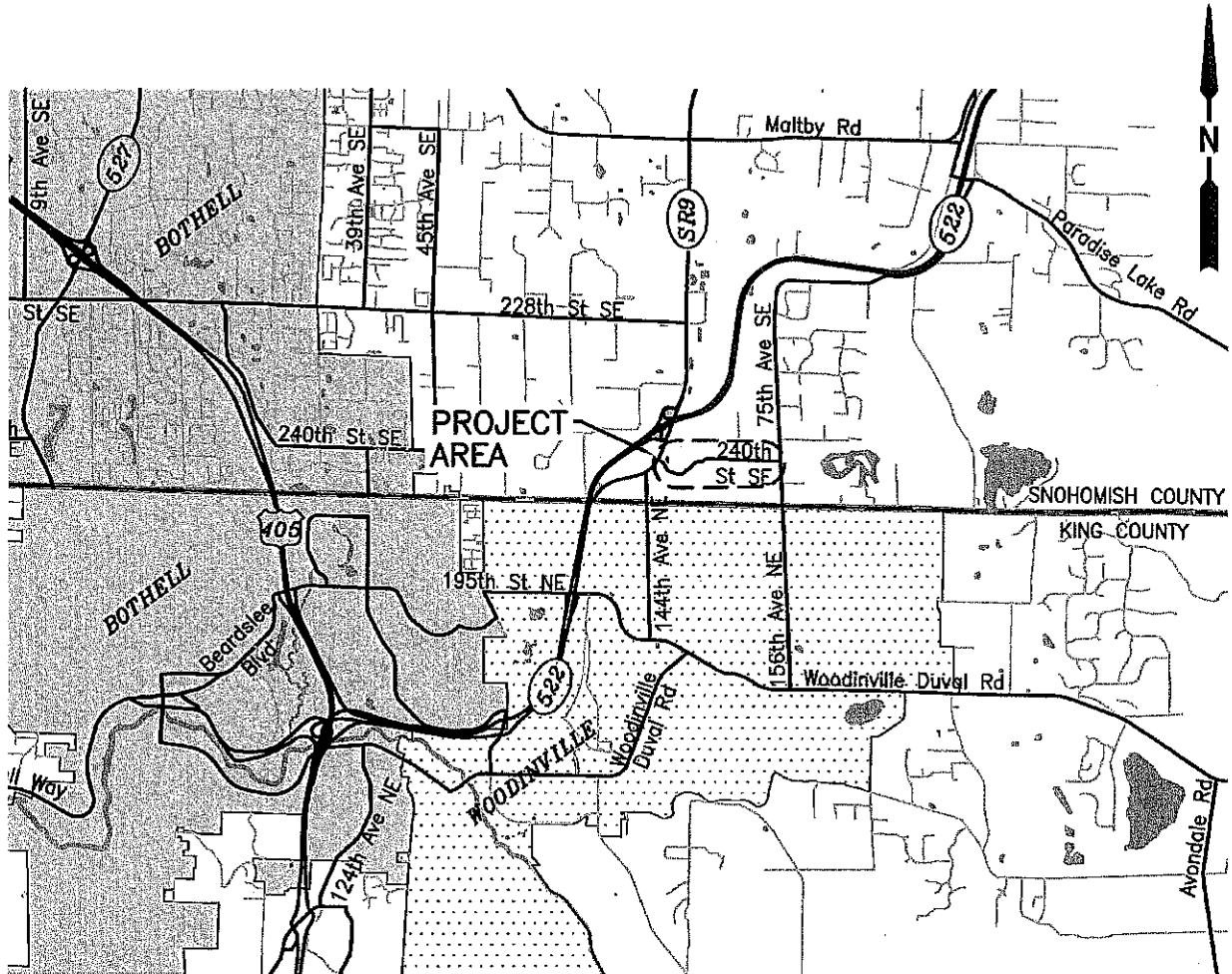
*Summary shown for TDA 4, the only TDA requiring flow control and/or treatment.

** See Wellington Hills County Park Drainage Report for flow control, before/after controlling rates and approximate volume.

TABLE OF CONTENTS

Executive Summary	4
Introduction.....	4
Design Criteria	5
Existing Conditions.....	5
Drainage Patterns and Features.....	5
TDA-1	5
TDA-2	5
TDA-3	5
TDA-4	6
TDA-5	6
Land Use and Areas	7
Soil Types	7
Offsite Analysis	8
<i>Upstream Analysis</i>	8
<i>Downstream Analysis</i>	8
Minimum Requirements	9
Areas to be Treated	9
Project Level Area Tabulations	9
Application of Minimum Requirements	9
Proposed Improvements:	10
TDA 1	10
TDA 2	11
TDA 3	11
TDA 4	11
Minimum Requirements 7: Flow Control.....	11
Minimum Requirement 6: Water Quality Treatment.....	11
Conveyance Features	12
TDA5	12
Operations and Maintenance.....	12
Appendix A-1 Subbasin Map	
A-2 Existing Drainage Patterns	
A-3 Proposed Drainage Patterns	
A-4 Equivalent Area Map	
Appendix B Drainage/LDA/LID Compliance Flowchart and Checklist	
Appendix C Hydraulic Calculations	
Appendix D Operations and Maintenance	
Appendix E Proposed Improvements (60% Plans)	
Appendix F Stormwater Pollution Prevention Plan	

Vicinity Map



Executive Summary

Snohomish County Public Works proposes widening lanes and adding pedestrian facilities along 240th St SE, east of Snohomish-Woodinville Rd in coordination with the associated proposed Wellington Hills County Park. In addition, pedestrian facilities and traffic calming features will be added to 240th St SE between the proposed roundabout at the Park entrance and 75th Ave SE.

The proposed improvements include:

- Widening 240th St SE to two 14' lanes and construction of pedestrian facilities on the north side of the roadway between Snohomish-Woodinville Rd and the proposed roundabout at the park.
- Installation of traffic calming devices between the proposed roundabout and 75th Ave SE.
- Walkway construction on the south side of 240th St SE from the east Park boundary to 75th Ave SE.
- Stormwater flow control and water quality treatment as required per the Snohomish County Drainage Code and Manual

There are five Threshold Discharge Areas (TDA) within the 240th St SE project of which TDA 4 meets the threshold for flow control and water quality treatment. Flow control will be provided on the Wellington Hills County Park site. Water quality treatment will be provided by Filterra (tree box filter) units near the frontage of the Wellington Hills Business Park.

This report is being submitted in conjunction with the Wellington Hills County Park Drainage Report. Please refer to the Wellington Hills County Park Drainage Report for more information on flow control for TDA 4.

Introduction

The project is located in the southeast quarter of Section 34 and southwest quarter of section 35, Township 27N, Range 5E of Snohomish County, north of the City of Woodinville; see the included Vicinity Map. The intersection of Snohomish-Woodinville Rd and 240th St SE has been analyzed by Snohomish County Traffic Operations. It was determined 240th St SE should be widened to 3 lanes consisting of a 14' eastbound lane, 14' left/thru lane and a 10' wide right turn northbound lane. East of the intersection, the two lane roadway will be widened to two 14' lanes up to the Wellington Hills County Park's proposed roundabout. Along 240th St SE within the Park, traffic calming devices are proposed. East of the Park to 75th Ave SE, a 5' wide walkway is proposed along the south side of the 240th St SE. See Appendix E – Proposed Improvements (60% Plans) for the proposed improvements.

Design Criteria

The applicable design standards by which stormwater design is compliant for this project include:

- 2010 Snohomish County Drainage Manual
- Snohomish County Engineering Design and Development Standards (EDDS), 2012 Edition

Existing Conditions

The existing 240th St SE roadway is best characterized as an urban collector arterial with a width of approximately 22' and developer improved sidewalk, curb, gutter and enclosed storm drainage system on the west end of the project. East of the Park boundary, the roadway transitions to a rural minor collector arterial with a width of 20' and roadside drainage ditches. The roadway longitudinal slope varies up to 20% with a superelevation of up to 11%. See included photos for existing roadway conditions.

Drainage Patterns and Features

The project site contains five separate threshold discharge areas (TDAs), as shown in Appendix A-2 – Existing Drainage Patterns. Per TDA definition, the drainage discharge paths from these areas do not intersect within ¼ mile from the project limits. See Appendix A-1 – Subbasin Maps for TDA drainage paths.

TDA-1

Approximately 100 ft west of 75th Ave SE, the roadway grade breaks west and east, forming the west edge of TDA 1. Roadway drainage east of the break travels northeast to a wide grass swale along the west side of 75th Ave SE. Runoff on 75th Ave SE within the project limits flows north to roadside ditches and east into an open field.

TDA-2

Approximately 100 ft west of 75th Ave SE, the roadway grade breaks west and east, forming the east edge of TDA 2. Roadway runoff sheet flows to roadside ditches on the north side of the 240th St SE, travelling west through a series of ditches and culverts. At 71st Dr SE, drainage flows through catch basins and pipes north to a roadside ditch, before crossing west under 71st Dr SE to meeting flows from TDA-3 and soon after joining Parson Creek.

TDA-3

Approximately 100 ft west of 75th Ave SE, the roadway grade breaks west and east, forming the east edge of TDA 3. Roadway drainage west of the break and on the south side of the roadway crown travels west along the roadside until forming a ditch approximately 750 ft west of 75th Ave SE. This ditch catches roadway runoff and some drainage from the vegetated portion of the subbasin, south of the roadway. At 71st Dr SE, a cross culvert funnels drainage to the northwest corner of the 240th St SE/71st Dr SE

intersection. Under normal flow conditions, drainage meanders north along the roadside ditch into Parson Creek. Under high flow conditions, drainage overtops the ditch at the northwest corner of 240th/75th and enters a meandering swale, traveling northwesterly until entering a defined channel and joining with Parson Creek. Parson Creek travels northwest under SR522 and Highway 9, then merging with Little Bear Creek. See Appendix A-1 for the flow paths.

TDA-4

TDA 4 begins 700 ft west of 71st Dr SE, flowing west down towards Snohomish-Woodinville Rd. Roadway drainage and vegetated areas within 240th St SE right of way flow to roadside ditches, traveling through a series of ditches and culverts alongside the roadway down the hill. On the north side of the roadway, at the Wellington Hills Business Park improvements, drainage enters an enclosed system comprised of catch basins and storm drain pipes. Drainage on the south side of the roadway travels 200' west of the developer improvements prior to entering an enclosed drainage system.

The north side system collects drainage for approximately 300' before the roadway slopes down to the south side of the roadway, where catch basins collect roadway and parking lot drainage. The north side system continues west, combining with the Wellington Hills Business Park pond outflow. These drainage flows outlet just east of the railroad tracks before entering a culvert crossing to and combining with south side flows. These combined flows travel west under the railroad tracks to a catch basin in an existing sidewalk. Drainage crosses back to the north side of 240th St SE, along the east side of Snohomish-Woodinville Rd until entering a westerly pipe system traveling through the Woodinville Costco. This pipe system outlets via a submerged 12" pipe on the east side of SR 522 before flowing in a meandering ditch to a 24" corrugated polyethylene culvert, crossing under SR 522 to terminating in Little Bear Creek and combining with flows from TDA 3. At this point, TDA 3 flows have traveled 1.18 miles and flows from TDA 4 have traveled 0.26 miles, confirming separate threshold discharge areas.

TDA-5

Approximately 50 east of Snohomish-Woodinville Rd, a portion of drainage flows in a northwesterly direction down the Woodinville Costco entrance road. This drainage enters the enclosed Costco drainage system via catch basins near the bottom of the entrance road. The drainage enters a detention pipe system, existing to the west and then treated via utility vaults. The drainage is enclosed to the northwest corner of the Costco property and passing into a 12" corrugated polyethylene culvert. This culvert travels to the northwest, under SR522, before joining with Little Bear Creek and flows from TDA 4 and TDA 3. The TDA 5 flow path is 0.26 miles and TDA 4 flow path is 0.38 miles at their junction, confirming separate threshold drainage areas.

Little Bear Creek flows to the southwest before merging with Howell Creek, flowing into the Sammamish River, then Lake Washington, eventually to Lake Union and the Puget Sound.

Land Use and Areas

Sewall Wetland Consulting, Inc. conducted on-site investigation for Parks, revealing three streams and nine wetlands in close proximity to the Parks project.

Of the nine wetlands, wetland J, a Category IV wetland, is within the project limits for the roadway portion of the project. Wetland J is located on the north side of 240th St SE, on the west side of the existing golf course. Drainage from just north of wetland J slopes down to the wetland, where drainage interflows with existing roadway drainage.

Vegetation in undeveloped areas (as identified by Sewall Wetland Consultants, Inc) is dominated by salmonberry (*Rubus spectabilis*), indian plum (*Oemleria cerasiformis*), sword fern (*Polystichum manitum*), red elderberry (*Sambucus racemosa pubens*), stinging nettle (*Urtica dioica*), bracken fern (*Pteridium aquilinum*), hazelnut (*Corylus cornuta*), big leaf maple (*Acer macrophyllum Pursh*), douglas fir (*Pseudotsuga menziesii*), western hemlock (*Tsuga heterophylla*), and western red cedar (*Thuja plicatum*).

Soil Types

Surficial geology of the project area has been mapped by the USGS and is shown partially on the "Geologic Map of the Bothell Quadrangle, Snohomish and King Counties, WA" by J.P. Minard dated 1985. Surficial soil types mapped in the general vicinity of the project area is typical for glaciated locations within Snohomish County.

The primary mapped SCS soils classification from the project site are Alderwood gravelly sandy loam, 2 to 8 percent and 8 to 15 percent. These soils have a permeability of 2 to 6 inches per hour.

Based on the Critical Aquifer Recharge Area/Wellhead Protection Map the project site is located approximately 0.40 miles southwest of the critical aquifer recharge area designated as the Cross Valley Sole Source Aquifer.

A preliminary geotechnical investigation has determined soils on the southeast corner of Snohomish-Woodinville Rd and 240th St SE may be suitable for an infiltration facility. These soils, found 8' below ground surface, have a preliminary infiltration rate of 2 in/hr. Groundwater was not encountered at an excavation limit of 13'. A Geotechnical Report summarizing the investigation and recommendations is being prepared by the Snohomish County Geotechnical Group.

Offsite Analysis

Upstream Analysis

Due to the existing topography, TDA 3 is at the top of a localized plateau. In addition to the roadway drainage from 240th St SE, a large vegetated area to the south of the roadway is also in the same subbasin. There are no signs of any additional runoff entering the project site from this vegetated area.

When 240th St SE was originally constructed, the roadway was cut into the existing topography. Due to this, each side of 240th St SE which is mostly vegetated drains down into the roadside ditches. In addition, a larger portion of vegetated Park area flows onto the east side ditches of 240th St SE.

There will be no upstream impacts to this project. Runoff will continue to be conveyed through the existing drainage system. See Appendix A-1 – Subbasin Map for the upstream drainage pattern.

Downstream Analysis

A field review was conducted by Brook Chesterfield and Sheela George on March 25th, 2013 with an approximate temperature of 60 degrees and mostly sunny conditions. The field review of downstream conditions revealed no downstream conveyance issues. There were no drainage complaints submitted to Surface Water Management.

The existing flow pattern will be maintained and there will be no negative impacts due to this project. Existing downstream drainage systems are described in the drainage patterns and feature section above. See Appendix A-1 – Subbasin Map and A-2 – Existing Drainage Patterns for the downstream drainage patterns and included photos.

Minimum Requirements

Areas to be Treated

As shown in the table below, the new impervious area is 0.41 acres which includes a 3% contingency. See Appendices A-1 thru A-4 for TDAs as shown below

Project Level Area Tabulations

Surface type	TDA 1	TDA 2	TDA 3	TDA 4	TDA 5	PROJECT TOTAL
Existing impervious	4,961 sf (0.11 ac)	4,280 sf (0.10 ac)	4,346 sf (0.10 ac)	52,003 sf (1.19 ac)	3,280 sf (0.08 ac)	68,870 sf (1.58 ac)
Existing pervious	4,781 sf (0.11 ac)	7,132 sf (0.16 ac)	7,007 sf (0.16 ac)	51,004 sf (1.17 ac)	4,224 sf (0.10 ac)	74,148 sf (1.70 ac)
TOTAL EXISTING AREA	9,742 sf (0.22 ac)	11,412 sf (0.26 ac)	11,353 sf (0.26 ac)	103,007 sf (2.36 ac)	7,504 sf (0.17 ac)	143,018 sf (3.28 ac)
Proposed impervious	5,417 sf (0.12 ac)	4,280 sf (0.10 ac)	5,869 sf (0.13 ac)	69,479 sf (1.60 ac)	4,238 sf (0.10 ac)	89,283 sf (2.05 ac)
Proposed pervious	3,038 sf (0.07 ac)	7,303 sf (0.17 ac)	5,310 sf (0.12 ac)	39,665 sf (0.91 ac)	3,251 sf (0.07 ac)	58,567 sf (1.34 ac)
TOTAL PROPOSED AREA	8,455 sf (0.19 ac)	11,583 sf (0.27 ac)	11,179 sf (0.26 ac)	109,144 sf (2.51 ac)	7,489 sf (0.17 ac)	147,850 sf (3.39 ac)
Replaced impervious	0 sf (0.07 ac)	0 sf (0.07 ac)	0 sf (0 ac)	26,956 sf (0.62 ac)	0 sf (0 ac)	26,956 sf (0.62 ac)
New PGIS	431 sf (0.01 ac)	0 sf (0.00 ac)	1521 sf (0.03 ac)	*10,900 sf (0.25 ac)	857 sf (0.02 ac)	13,709 sf (0.31 ac)
New Impervious	470 sf (0.01 ac)	0 sf (0.00 ac)	1,569 sf (0.04 ac)	*17,500 sf (0.40 ac)	987 sf (0.02 ac)	20,526 sf (0.47 ac)

***Includes 3% contingency on New Impervious and New PGIS**

Application of Minimum Requirements

According to the Drainage/LDA/LID Flowchart (see Appendix B), Minimum Requirements 1-9 will be applicable to this project.

Minimum Requirement 1 – Stormwater Site Plans [SCC 30.63A.400-440] – Existing site drainage pattern, basins, and Threshold Areas are analyzed. Proposed drainage patterns have been prepared.

Minimum Requirement 2 – Construction Stormwater Pollution Prevention Plan (SWPP) [SCC 30.63A.445-510]. A preliminary SWPP has been prepared.

Minimum Requirement 3 – Source Control of Pollution [SCC 30.63A.515] – Catch basin inlets, wattle check dams, etc. will be installed. Permanent erosion control blankets, seeding and mulching will be placed along slopes to prevent erosion within the project area.

Minimum Requirement 4 – Preservation of Natural Drainage System and Outfall [SCC 30.63A.520] – Natural drainage patterns is maintained and discharges from the project site are not altered. There will be no impact to the down gradient properties.

Minimum Requirement 5 – On-site Stormwater Management [SCC 30.63A.525] - Topsoil all disturbed areas

Min Requirement 6: Runoff treatment (water quality treatment) [SCC 30.63A.530-545] - Filterra units will be used along 240th St SE to treat the PGIS within the project limits.

Min Requirement 7: Flow control (detention) [SCC 30.63A.550-560]
Flow control will be provided on the related Parks project. Please see the Wellington Hills County Park Drainage Report for more information.

Min Requirement 8: Wetlands Protection [SCC 30.63A.570]
There are no wetlands in the vicinity of proposed stormwater facilities and no proposed stormwater modifications to existing wetlands.

Min Requirement 9: Operation and Maintenance [SCC 30.63A.575-605]
Proper operation and maintenance of Infiltration facilities is provided in Appendix E of this report per the 2012 Western Washington Low Impact Development Operation and Maintenance Guidance Document.

Proposed Improvements:

Please see Appendix A-3 – Proposed Drainage Patterns for the below described drainage patterns.

TDA 1

A planter is proposed between at grade walkway improvements in TDA 1. No additional PGIS will be added to this TDA. Drainage will sheet flow from the walkway and roadway to the existing grass swale on the northwest corner of the intersection. This drainage will continue northeast per the existing drainage pattern as shown in Appendix A-2 – Existing Drainage Patterns.

No proposed PGIS is proposed within TDA 3. This TDA does not meet the threshold for MR 6 or MR 7.

TDA 2

Directly north of 240th St SE roadway crown and opposite TDA 3, no improvements are proposed in this TDA. Existing drainage patterns will be maintained.

No proposed PGIS is proposed within TDA 2. This TDA does not meet the threshold for MR 6 or MR 7.

TDA 3

A ditch is proposed between at grade walkway improvements in TDA 3. No additional PGIS will be added to this TDA. Drainage will sheet flow from the walkway and roadway to the proposed ditch. This drainage will continue west per the existing drainage pattern as shown in Appendix A-2 – Existing Drainage Patterns.

No proposed PGIS is proposed within TDA 3. This TDA does not meet the threshold for MR 6 or MR 7.

TDA 4

Drainage from the upper portion of TDA 4 on the north side of the roadway will be conveyed by pipes down to approximately station 111+00, where open channel flows from the south side of 240th St SE will cross and combine into one system. At Station 107+08, the proposed pipe network along the north side of the roadway will tie in with the existing closed pipe system along the frontage of the Wellington Hills Business Park. Downstream of the tie-in, the existing drainage network will be maintained as much as possible. Water quality treatment will be provided by use of Filterra units for approximately 13,000 sf of Pollution Generating Impervious Surface (PGIS), which is greater than the 10,900 sf required. Stormwater will flow through the existing drainage network under the railroad right of way, then north and west to the Costco pipe network and eventually to Little Bear Creek. See Appendix A-1 – Subbasin Maps for the existing downstream flow path. See Appendix A-3 – Proposed Drainage Patterns for a map showing the proposed drainage network and patterns as described above and see Appendix A-4 – Equivalent Area Map for equivalent areas

Minimum Requirements 7: Flow Control

TDA 4 contains more than 10,000 square feet of effective impervious surface, per Snohomish County Code (SCC) 30.63A.555, meeting the threshold for Minimum Requirement (MR) 7.

Flow control will be provided for an equivalent area of 17,500 sf on the Wellington Hills County Park site. Please see the Wellington Hills County Park Drainage Report for more information.

Minimum Requirement 6: Water Quality Treatment

Two Filterra (tree box filter) units are proposed to meet water quality treatment requirements.

Surface type	TDA 4
New PGIS	10,900 sf (0.25 ac)
PGIS Routed to Treatment BMP	13,000 sf (0.30 ac)
New Impervious	17,500 sf (0.40 ac)
Equivalent Impervious	17,500 sf (0.40 ac)

Conveyance Features

All conveyance systems within the project site will be analyzed to accommodate the peak discharge from the 100-year, 24-hr storm. Existing drainage patterns will be maintained.

The project conveyance includes a network of drainage ditches, catch basins and pipes.

TDA5

The proposed PGIS created in TDA 5 is listed below. This TDA does not meet the threshold for MR 6 or MR 7.

Surface type	TDA 5
NEW PGIS	857 sf (0.02 ac)

Operations and Maintenance

Routine maintenance of the proposed improvement will be carried out by road maintenance. See Appendix D – Operations and Maintenance for a more complete description of the maintenance needs of the BMPs proposed on this project as outlined in the 2012 Western Washington Low Impact Development Operation and Maintenance Guidance Document.

Photos



Photo 1: View looking east on 240th St SE @ Snohomish Woodinville Rd



Photo 2: View looking west on 240th St SE @ Snohomish Woodinville Rd



Photo 3: View looking northeast on 240th St SE



Photo 4: View looking southwest on 240th St SE



Photo 5: 240th St SE at 75th Ave SE – Looking West

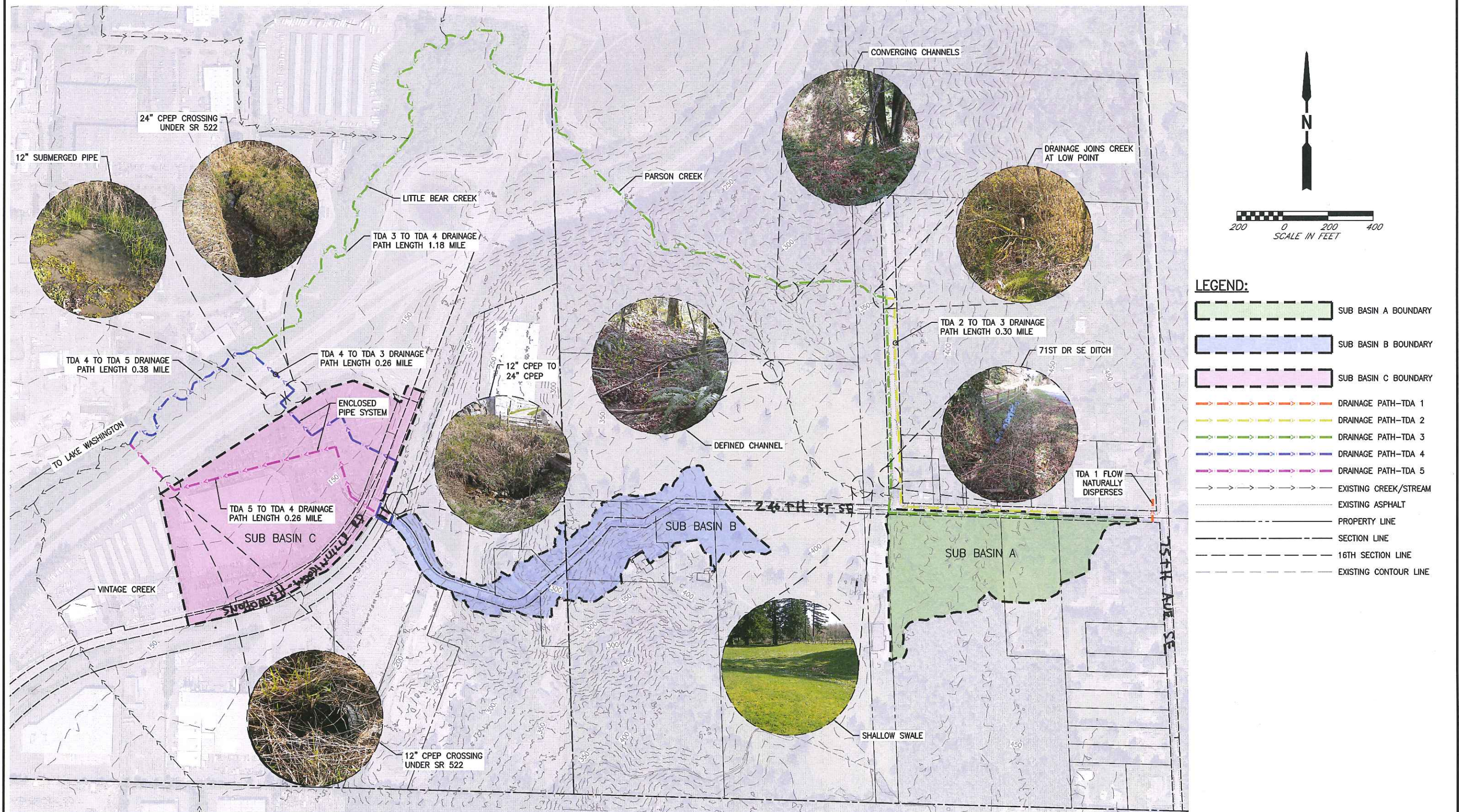


Photo 6: 240th St SE at 75th Ave SE – Looking East

Appendix A

Subbasin Figures

SECTION 34 & 35, T. 27 N., R5E., W.M.



PLAN CHECK	BY	DATE							Last Saved By: spwsjt Dec 16, 2013 -- 2:14pm			
									REGION NO.	STATE	FED. AID PROJ. NO.	SURVEY NO.
									10	WASH.		4346
									DESIGNED BY: BAC		DRAWN BY: SJT	
									FIELD BOOK(S):		UPI# 12-0059-1	
			DATE	NO.	REVISION	BY						

PRELIMINARY

SNOHOMISH COUNTY
DEPARTMENT OF
PUBLIC WORKS

FUNDING NO. RR9322

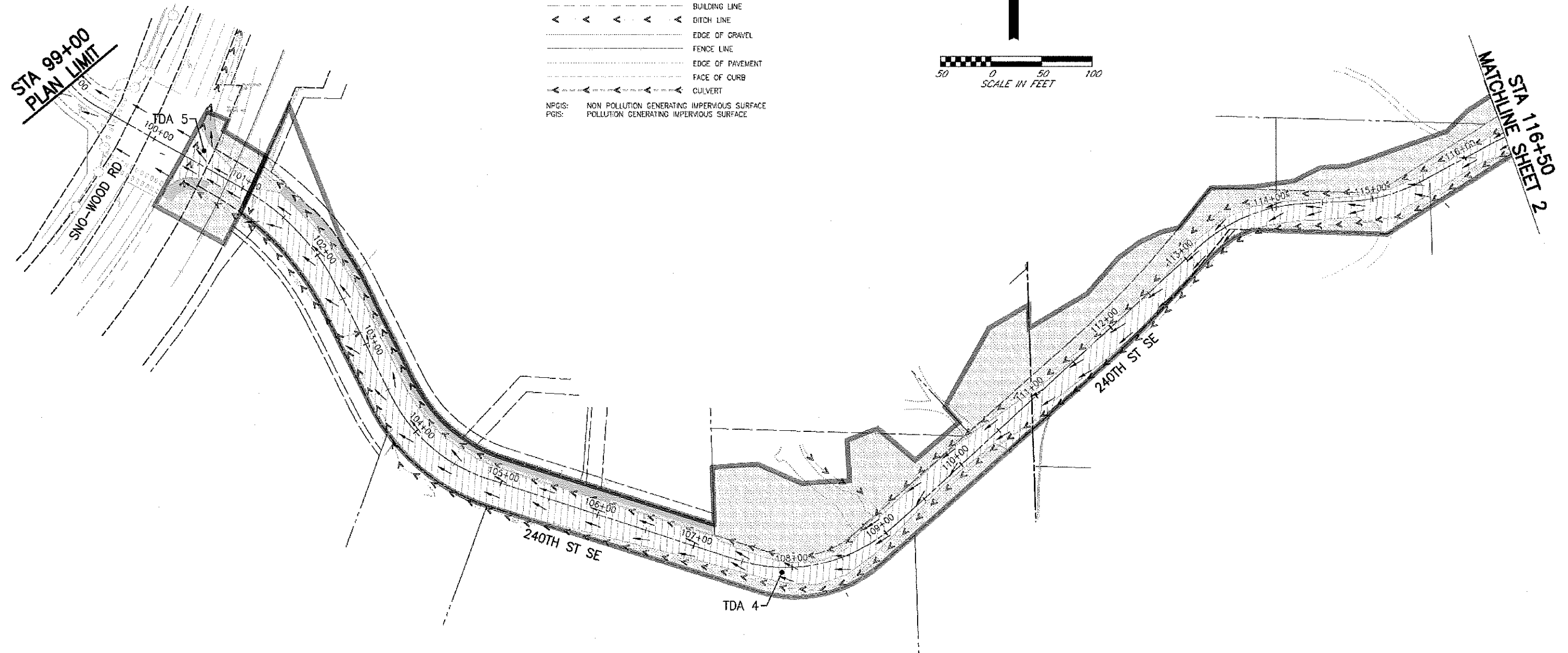
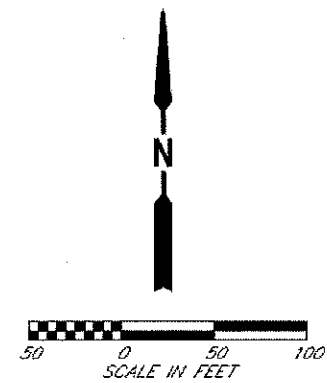
**240TH ST SE
IMPROVEMENTS
SUBBASIN MAP
APPENDIX A-1**

REFERENCE SHEET NO.
A-1
SHEET
OF
SHEETS

LEGEND:

	NPGIS (SIDEWALK/CURB)
	PERVIOUS SURFACE (LAWN, PASTURE, LANDSCAPE AREAS)
	PGIS (ROADWAY)
	CULVERT/DITCH/STORM DRAIN FLOW DIRECTION
	EXISTING IMPERVIOUS FLOW DIRECTION
	TDA/PROJECT LIMITS
	BUILDING LINE
	DITCH LINE
	EDGE OF GRAVEL
	FENCE LINE
	EDGE OF PAVEMENT
	FACE OF CURB
	CULVERT

NPGIS: NON POLLUTION GENERATING IMPERVIOUS SURFACE
 PGIS: POLLUTION GENERATING IMPERVIOUS SURFACE



PLAN CHECK	BY	DATE						Last Saved By: spwsjt Dec 16, 2013 - 4:47pm			
								REGION NO.	STATE	FED. AID PROJ. NO.	SURVEY NO.
								10	WASH.		4345
								DESIGNED BY:		DRAWN BY:	
								BAC		SJT	
								FIELD BOOK(S):		UPI#	
			DATE	NO.	REVISION		BY			12-0059-1	

PRELIMINARY

SNOHOMISH COUNTY
DEPARTMENT OF
PUBLIC WORKS

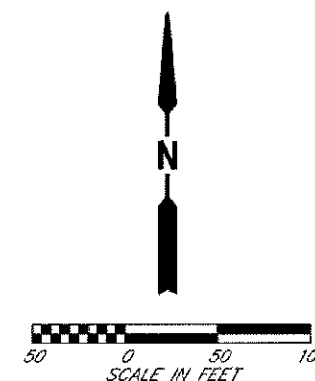
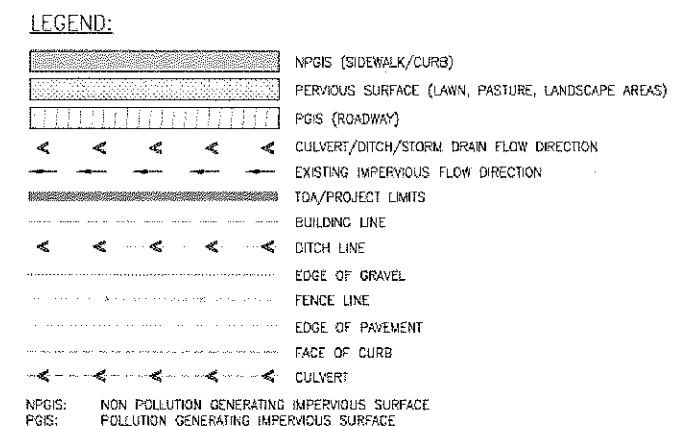
FUNDING NO. RR 9322

240TH ST SE
IMPROVEMENTS
APPENDIX A-2
EXIST. DRAINAGE PATTERNS

REFERENCE
SHEET NO.

SHEET
1
OF
2
SHEETS

S:\PW_Projct_Data_Management\B PROJECTS_UPI Year_2012\12-0059-1\2 CADD\2.1 production data\2.1 Drawings\Design\Engineer\Design Report\12-0059_EXST-DRN.dwg, EXST-DRN.dwg, EXST-DRN.dwg, 12/18/2013 4:47:52 PM, spsajit, 1-2



PLAN CHECK	BY	DATE								Last Saved By: spwsjl Dec 16, 2013 — 4:47pm				
										REGION NO.	STATE	FED. AID PROJ. NO.	SURVEY NO.	
										10	WASH.		4346	
										DESIGNED BY: BAC		DRAWN BY: SJT		
										FIELD BOOK(S):		UPI# 12-0059-1		
			DATE	NO.	REVISION				BY					

SNOHOMISH COUNTY
DEPARTMENT OF
PUBLIC WORKS

FUNDING NO. RR 9322

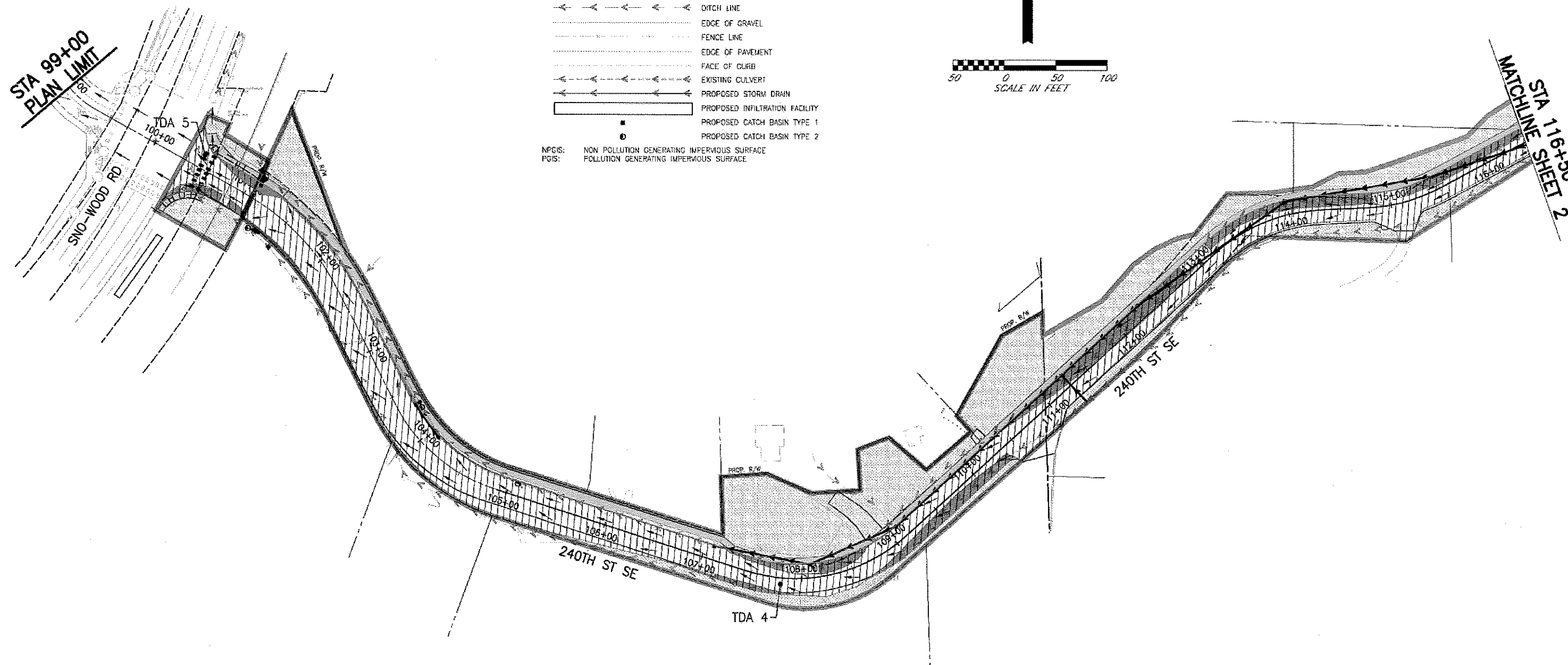
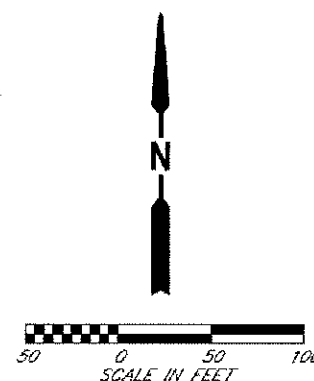
240TH ST SE
IMPROVEMENTS
APPENDIX A-2
EXIST. DRAINAGE PATTERNS

REFERENCE SHEET NO.	
SHEET 2 OF 2 SHEETS	

LEGEND:

	PGIS (ROADWAY)
	NPGIS (SIDEWALK/CURB)
	PERVIOUS SURFACE (LAWN, PASTURE, LANDSCAPE AREAS)
	NEW PGIS (ROADWAY)
	CULVERT/DITCH/STORM DRAIN FLOW DIRECTION
	EXISTING IMPERVIOUS FLOW DIRECTION
	TDA/PROJECT LIMITS
	BUILDING LINE
	DITCH LINE
	EDGE OF GRAVEL
	FENCE LINE
	EDGE OF PAVEMENT
	FACE OF CURB
	EXISTING CULVERT
	PROPOSED STORM DRAIN
	PROPOSED INFILTRATION FACILITY
	PROPOSED CATCH BASIN TYPE 1
	PROPOSED CATCH BASIN TYPE 2

NPGIS: NON POLLUTION GENERATING IMPERVIOUS SURFACE
 PGIS: POLLUTION GENERATING IMPERVIOUS SURFACE



PLAN CHECK	BY	DATE					Last Saved By: spwajt Dec 16, 2013 -- 4:52pm			
							REGION NO.	STATE	FED. AID PROJ. NO.	SURVEY NO.
							10	WASH.		4346
							DESIGNED BY: BAC		DRAWN BY: SJT	
			DATE	NO.	REVISION	BY	FIELD BOOK(S):			UPI# 12-0059-1

PRELIMINARY

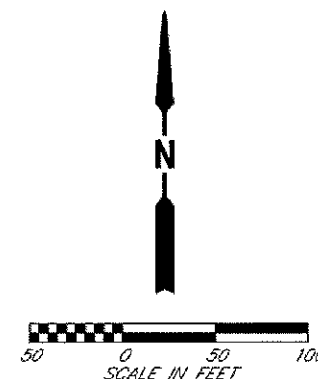
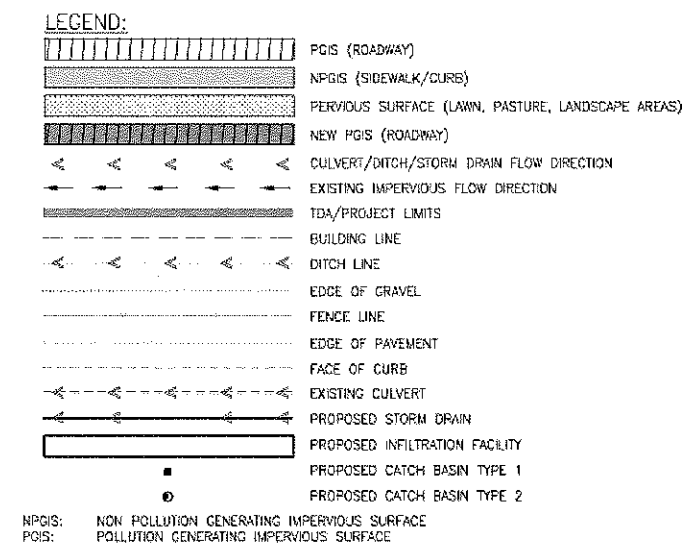
SNOHOMISH COUNTY
DEPARTMENT OF
PUBLIC WORKS

FUNDING NO. RR 9322

240TH ST SE
IMPROVEMENTS
APPENDIX A-3
PROP. DRAINAGE PATTERNS

REFERENCE SHEET NO.	
SHEET 1 OF 2 SHEETS	

S:\IPW_Project_Data_Management\6-PROJECTS\UP1 Year_2012\12-0059_412 CADD\2.1 production data\2.1 Drawings\Design\Engineer\Drainage Report\12-0059_PROP.DRN.dwg, PROP.DRN PAT-2, 12/16/2013 4:52:53 PM, swwsjl, 12



PLAN CHECK	BY	DATE								Last Saved By: spawjl Dec 16, 2013 - 4:52pm			
										REGION NO.	STATE	FED. AID PROJ. NO.	SURVEY NO.
										10	WASH.		4346
										DESIGNED BY: BAC		DRAWN BY: SJT	
			DATE	NO.	REVISION		BY			FIELD BOOK(S):		UPI# 12-0059-1	

SNOHOMISH COUNTY
DEPARTMENT OF
PUBLIC WORKS

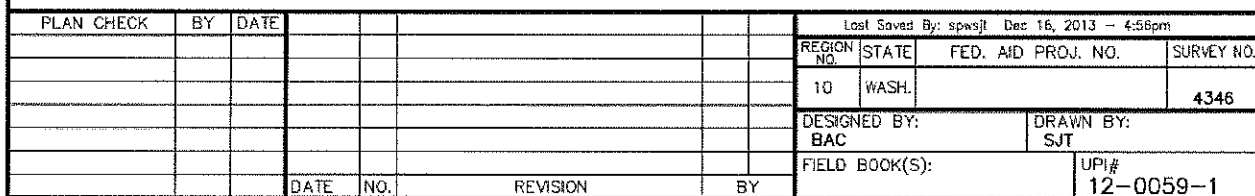
FUNDING NO. RR 9322

240TH ST SE
IMPROVEMENTS
APPENDIX A-3
PROP. DRAINAGE PATTERNS

REFERENCE
SHEET NO.

SHEET
2
OF
2
SHEETS

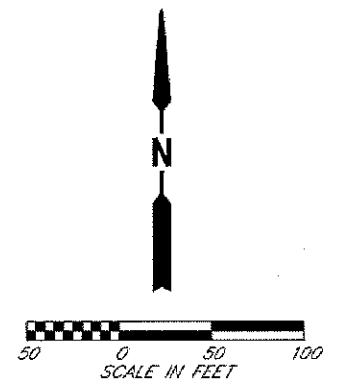
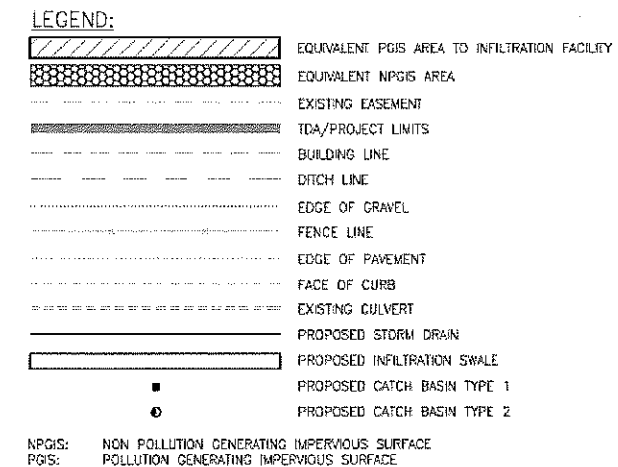
S:\PW Project_Data_Management\6-PROJECTS\UP\Year_2012\12-0059-112 CADD\2.1 production data\2.1 Drawings\Design\Engineer\Drawings Report\12-0059 EQUV-AREA.dwg, EQU-AREA-1, 12/16/2013 4:57:04 PM, sswall, 12



REFERENCE
SHEET NO.

SHEET
1
OF
2
SHEETS

S:\FW_P\Project_Data_Management\B-PROJECTS\UPI Year_2012\12-0059-1\2 CADD\2.1 production data\2.1 Drawings\Design\Engineer\Drainage Report\12-0059_EQUIV-AREA.dwg, EQU-AREA-2, 12/16/2013 4:57:06 PM, spwsgt, 1,2



PLAN CHECK	BY	DATE						Lost Saved By: spwsjt Dec 16, 2013 - 4:56pm			
								REGION NO.	STATE	FED. AID PROJ. NO.	SURVEY NO.
								10	WASH.		4346
								DESIGNED BY:		DRAWN BY:	
								BAC		SJT	
								FIELD BOOK(S):		UPI#	
			DATE	NO.	REVISION	BY				12-0059-1	

SNOHOMISH COUNTY
DEPARTMENT OF
PUBLIC WORKS

FUNDING NO. RR 9322

240TH ST SE
IMPROVEMENTS
APPENDIX A-4
EQUIVALENT AREA MAP

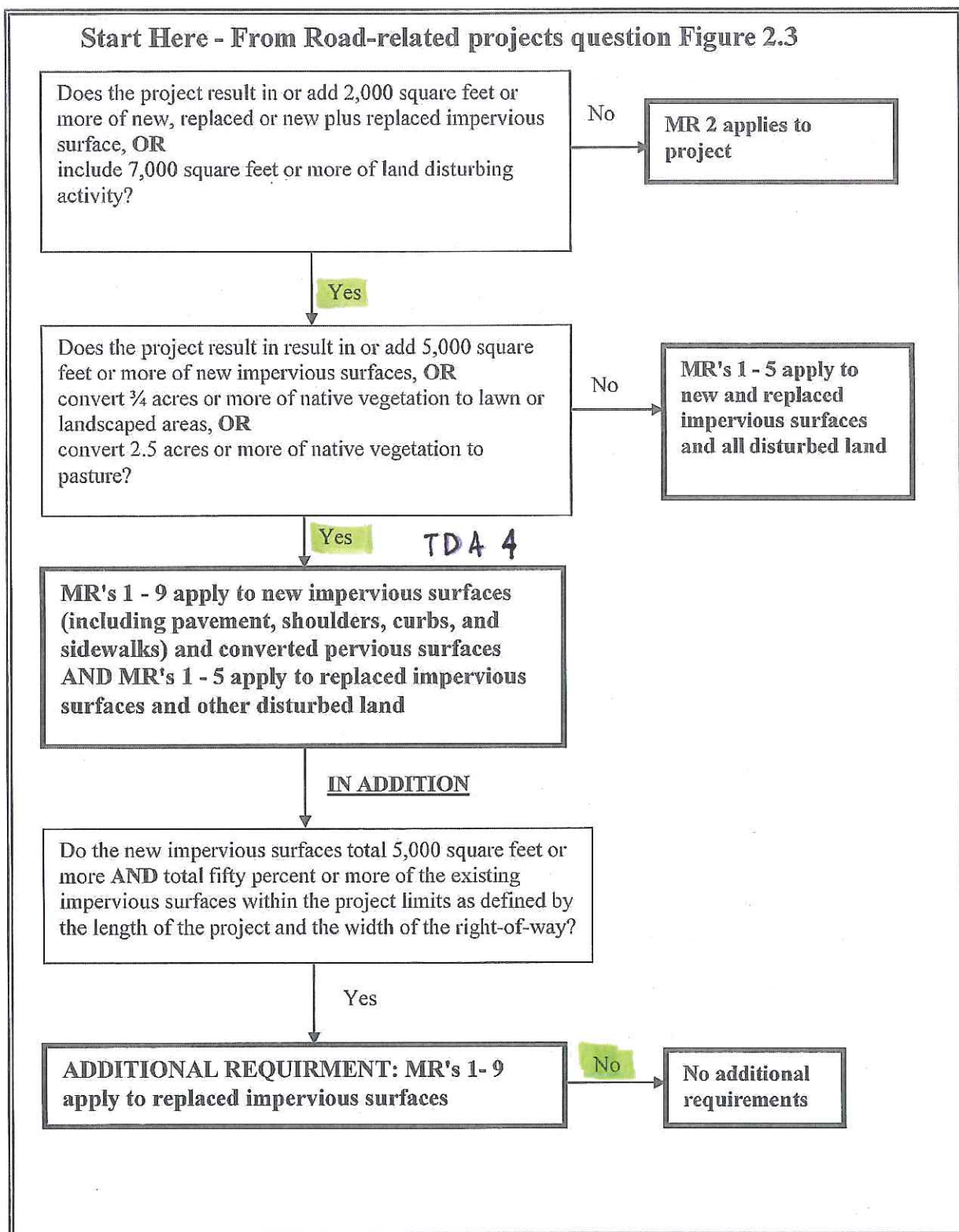
REFERENCE
SHEET NO.

SHEET
2
OF
2
SHEETS

Appendix B

Drainage Compliance Flowchart

Figure 2.4 Minimum Requirements (MR's) for Road-related Redevelopment Projects



(6) When a site has a closed depression that will be altered or modified, applicants shall perform a closed depression analysis and design flow control facilities in accordance with volume III, chapter 2.4 of the Drainage Manual.

(Added Amended Ord. 10-026, June 9, 2010, Eff date Sept. 30, 2010)

30.63A.555 Minimum requirement 7: Flow control thresholds.

(1) Projects that meet the following thresholds illustrated in SCC Table 30.63A.555 require construction of flow control facilities and/or BMPs:

(a) Projects in which the total of effective impervious surfaces is 10,000 square feet or more in a threshold discharge area;

(b) Projects that convert three-quarters of an acre or more of native vegetation to lawn or landscape and from which there is a surface water discharge into a natural or man-made conveyance system from the site;

(c) Projects that convert 2.5 acres or more of native vegetation to pasture in a threshold discharge area and from which there is a surface discharge into a natural or man-made conveyance system from the site; and

(d) Projects that through a combination of effective impervious surfaces and converted pervious surfaces cause a 0.1 cubic feet per second or greater increase in the 100-year flow frequency from a threshold discharge area as estimated using the Western Washington Hydrology Model or other model approved by the Washington State Department of Ecology and the department.

Table 30.63A.555
Flow Control Requirements by Threshold Discharge Area

	Flow Control Facilities Required	On-site Stormwater Management BMPs Required
Less than $\frac{3}{4}$ acres conversion to lawn/landscape, or less than 2.5 acres to pasture	No	Yes
Greater than or equal to $\frac{3}{4}$ acres conversion to lawn/landscape, or greater than or equal to 2.5 acres to pasture	Yes	Yes
Less than 10,000 square feet of effective impervious area	No	Yes
Greater than or equal to 10,000 square feet of effective impervious area	Yes	Yes
Greater than or equal to 0.1 cubic feet per second increase in the 100-year flow frequency	Yes	Yes

(2) That portion of any project in which the above thresholds are not exceeded in a threshold discharge area shall include on-site stormwater management BMPs in accordance with minimum requirement 5 pursuant to SCC 30.63A.525.

(Added Amended Ord. 10-026, June 9, 2010, Eff date Sept. 30, 2010; Amended by Amended Ord. 12-018, May 2, 2012, Eff date May 21, 2012)

30.63A.560 Minimum requirement 7: Flow control design – parking lots.

Parking lot ponding may be allowed if the following flow control requirements are met:

- (1) Ponding is limited to a 0.5 foot elevation at the curb line;
- (2) No ponding is allowed in the emergency or drive lanes during a 100-year storm event;

Appendix C

Hydraulic Calculations

MGS FLOOD PROJECT REPORT

Program Version: MGSFlood 4.08
Program License Number: 200210001
Run Date: 07/03/2013 12:32 PM

Input File Name: 240th Targeted Infiltration Analysis.fld
Project Name: Wellington Hills-240th St SE Improvements
Analysis Title: 240th Infiltration Analysis-Post Developed
Comments:

PRECIPITATION INPUT

Computational Time Step (Minutes): 60

Extended Precipitation Timeseries Selected

Climatic Region Number: 1

Full Period of Record Available used for Routing

Precipitation Station : 95003205 Puget West 32 in_5min 10/01/1939-10/01/2097

Evaporation Station : 951032 Puget West 32 in MAP

Evaporation Scale Factor : 0.750

HSPF Parameter Region Number: 1

HSPF Parameter Region Name : USGS Default

***** WATERSHED DEFINITION *****

-----SCENARIO: PREDEVELOPED

Number of Subbasins: 1

----- Subbasin : Subbasin 1 -----

-----Area(Acres) -----

Till Forest	0.410
Till Pasture	0.000
Till Grass	0.000
Outwash Forest	0.000
Outwash Pasture	0.000
Outwash Grass	0.000
Wetland	0.000
Green Roof	0.000
User 2	0.000
Impervious	0.000

Subbasin Total 0.410

-----SCENARIO: POSTDEVELOPED

Number of Subbasins: 1

----- Subbasin : Subbasin 1 -----
 -----Area(Acres) -----

Till Forest	0.000
Till Pasture	0.000
Till Grass	0.000
Outwash Forest	0.000
Outwash Pasture	0.000
Outwash Grass	0.000
Wetland	0.000
Green Roof	0.000
User 2	0.000
Impervious	0.410

 Subbasin Total 0.410

***** LINK DATA *****

-----SCENARIO: PREDEVELOPED
 Number of Links: 1

Link Name: New Copy Lnk1
 Link Type: Copy
 Downstream Link: None

***** LINK DATA *****

-----SCENARIO: POSTDEVELOPED
 Number of Links: 1

Link Name: New Infil Trench Lnk1
 Link Type: Infiltration Trench
 Downstream Link: None

Trench Type	: Trench on Embankment Sideslope
Trench Length (ft)	: 75.00
Trench Width (ft)	: 6.00
Trench Depth (ft)	: 6.00
Trench Bottom Elev (ft)	: 100.00
Trench Rockfill Porosity (%)	: 95.00

Constant Infiltration Option Used
 Infiltration Rate (in/hr): 2.00

***** FLOOD FREQUENCY AND DURATION STATISTICS *****

-----SCENARIO: PREDEVELOPED
 Number of Subbasins: 1

Number of Links: 1

-----SCENARIO: POSTDEVELOPED

Number of Subbasins: 1

Number of Links: 1

*****Water Quality Facility Data *****

-----SCENARIO: PREDEVELOPED

Number of Links: 1

***** Link: New Copy Lnk1

Infiltration/Filtration Statistics-----

Total Runoff Volume (ac-ft): 21.20

Total Runoff Infiltrated (ac-ft): 0.00, 0.00%

Total Runoff Filtered (ac-ft): 0.00, 0.00%

Percent Treated (Infiltrated+Filtered)/Total Volume: 0.00%

-----SCENARIO: POSTDEVELOPED

Number of Links: 1

***** Link: New Infil Trench Lnk1 *****

Infiltration/Filtration Statistics-----

Total Runoff Volume (ac-ft): 140.97

Total Runoff Infiltrated (ac-ft): 140.97, 100.00%

Total Runoff Filtered (ac-ft): 0.00, 0.00%

Percent Treated (Infiltrated+Filtered)/Total Volume: 100.00%

*****Compliance Point Results *****

Scenario Predeveloped Compliance Link: New Copy Lnk1

Scenario Postdeveloped Compliance Link: New Infil Trench Lnk1

*** Point of Compliance Flow Frequency Data ***

Recurrence Interval Computed Using Gringorten Plotting Position

Predevelopment Runoff		Postdevelopment Runoff	
Tr (Years)	Discharge (cfs)	Tr (Years)	Discharge (cfs)
2-Year	7.492E-03	2-Year	9.928E-06
5-Year	0.012	5-Year	1.480E-05
10-Year	0.017	10-Year	1.909E-05
25-Year	0.020	25-Year	2.360E-05
50-Year	0.024	50-Year	2.594E-05
100-Year	0.030	100-Year	2.943E-05
200-Year	0.031	200-Year	0.045

** Record too Short to Compute Peak Discharge for These Recurrence Intervals

**** Flow Duration Performance According to Dept. of Ecology Criteria ****

Excursion at Predeveloped $\frac{1}{2}$ Q2 (Must be Less Than 0%):	-100.0%	PASS
Maximum Excursion from $\frac{1}{2}$ Q2 to Q2 (Must be Less Than 0%):	-100.0%	PASS
Maximum Excursion from Q2 to Q50 (Must be less than 10%):	-80.0%	PASS
Percent Excursion from Q2 to Q50 (Must be less than 50%):	0.0%	PASS

POND MEETS ALL DURATION DESIGN CRITERIA: PASS

Appendix D

Operations and Maintenance

Operation & Maintenance (OM) Manual v01



filterterra®

Bioretention Systems

A Growing Idea in Stormwater Filtration.



A Division of:

AMERICAST

Filterterra® Stormwater Bioretention Filtration System

toll free: (866) 349 3458 | fax: (804) 798 8400 | maintenance@filterterra.com | filterterra.com



Table of Contents

Overview

- Filterterra® General Description
- Filterterra® Schematic
- Basic Operations
- Design

Maintenance

- Maintenance Overview
 - Why Maintain?
 - When to Maintain?
- Exclusion of Services
- Maintenance Visit Summary
- Maintenance Tools, Safety Equipment and Supplies
- Maintenance Visit Procedure
- Maintenance Checklist

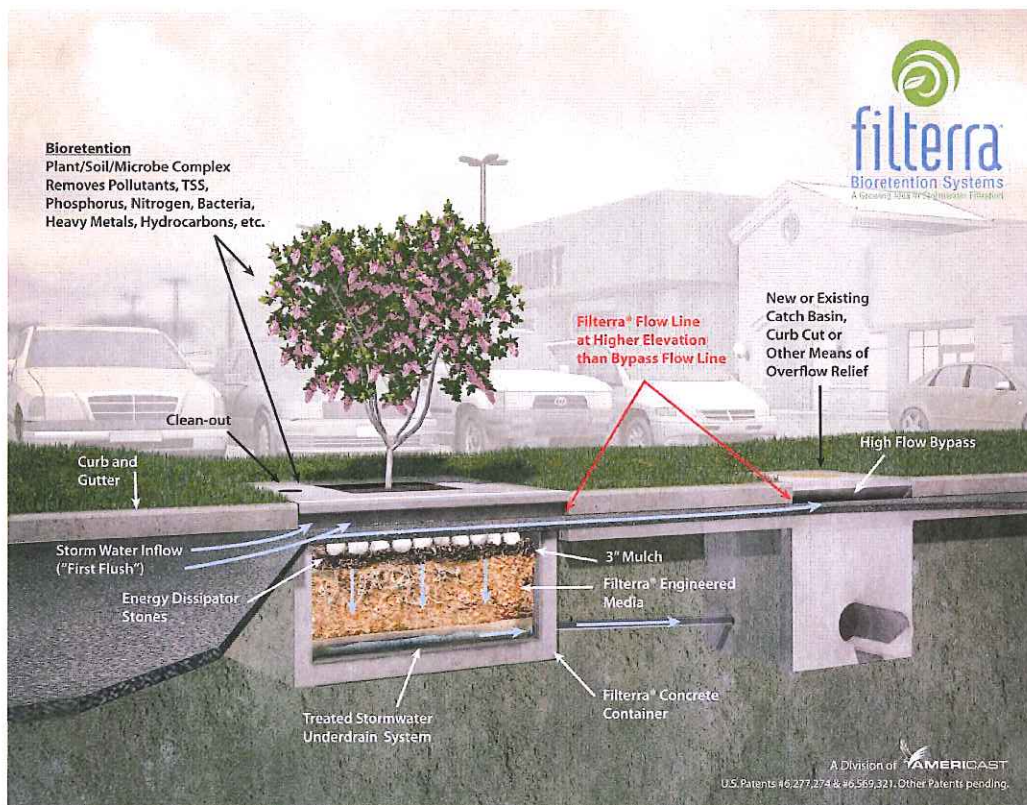
Resources

- Example Filterterra Project Maintenance Report Sheet*
- Example Filterterra Structure Maintenance Report Sheet*
- Filterterra® Warranty
- Drawing FTST-2: Filterterra Standard Configuration Detail*
- Drawing FTNL-3: Filterterra Narrow Length Configuration Detail*
- Drawing FTNW-3: Filterterra Narrow Width Configuration Detail*



General Description

The following general specifications describe the general operations and maintenance requirements for the Americast stormwater bioretention filtration system, the Filterterra®. The system utilizes physical, chemical and biological mechanisms of a soil, plant and microbe complex to remove pollutants typically found in urban stormwater runoff. The treatment system is a fully equipped, pre-constructed drop-in place unit designed for applications in the urban landscape to treat contaminated runoff.



Stormwater flows through a specially designed filter media mixture contained in a landscaped concrete container. The mixture immobilizes pollutants which are then decomposed, volatilized and incorporated into the biomass of the Filterterra® system's micro/macro fauna and flora. Stormwater runoff flows through the media and into an underdrain system at the bottom of the container, where the treated water is discharged. Higher flows bypass the Filterterra® to a downstream inlet or outfall.

Maintenance is a simple, inexpensive and safe operation that does not require confined space access, pumping or vacuum equipment or specialized tools. Properly trained landscape personnel can effectively maintain Filterterra® Stormwater systems by following instructions in this manual.



Basic Operations

Filterra® is a bioretention system in a concrete box. Contaminated stormwater runoff enters the filter box through the curb inlet spreading over the 3-inch layer of mulch on the surface of the filter media. As the water passes through the mulch layer, most of the larger sediment particles and heavy metals are removed through sedimentation and chemical reactions with the organic material in the mulch. Water passes through the soil media where the finer particles are removed and other chemical reactions take place to immobilize and capture pollutants in the soil media. The cleansed water passes into an underdrain and flows to a pipe system or other appropriate discharge point. Once the pollutants are in the soil, the bacteria begin to break down and metabolize the materials and the plants begin to uptake and metabolize the pollutants. Some pollutants such as heavy metals, which are chemically bound to organic particles in the mulch, are released over time as the organic matter decomposes to release the metals to the feeder roots of the plants and the cells of the bacteria in the soil where they remain and are recycled. Other pollutants such as phosphorus are chemically bound to the soil particles and released slowly back to the plants and bacteria and used in their metabolic processes. Nitrogen goes through a very complex variety of biochemical processes where it can ultimately end up in the plant/bacteria biomass, turned to nitrogen gas or dissolves back into the water column as nitrates depending on soil temperature, pH and the availability of oxygen. The pollutants ultimately are retained in the mulch, soil and biomass with some passing out of the system into the air or back into the water.

Design and Installation

Each project presents different scopes for the use of Filterra® systems. To ensure the safe and specified function of the stormwater BMP, Americast reviews each application before supply. Information and help may be provided to the design engineer during the planning process. Correct Filterra® box sizing (by rainfall region) is essential to predict pollutant removal rates for a given area. The engineer shall submit calculations for approval by the local jurisdiction. The contractor is responsible for the correct installation of Filterra units as shown in approved plans. A comprehensive installation manual is available at fillterra.com.

Maintenance

Why Maintain?

All stormwater treatment systems require maintenance for effective operation. This necessity is often incorporated in your property's permitting process as a legally binding BMP maintenance agreement.

- Avoid legal challenges from your jurisdiction's maintenance enforcement program.
- Prolong the expected lifespan of your Filterra media.
- Avoid more costly media replacement.
- Help reduce pollutant loads leaving your property.

Simple maintenance of the Filterra® is required to continue effective pollutant removal from stormwater runoff before discharge into downstream waters. This procedure will also extend the longevity of the living biofilter system. The unit will recycle and accumulate pollutants within the biomass, but is also subjected to other materials entering the throat. This may include trash, silt and leaves etc. which will be contained within the void below the top grate and above the mulch layer. Too much silt may inhibit the Filterra's® flow rate, which is the reason for site stabilization before activation. Regular replacement of the mulch stops accumulation of such sediment.



When to Maintain?

Americast includes a 1-year maintenance plan with each system purchase. Annual included maintenance consists of a maximum of two (2) scheduled visits. Additional maintenance may be necessary depending on sediment and trash loading (by Owner or at additional cost). The start of the maintenance plan begins when the system is activated for full operation. Full operation is defined as the unit installed, curb and gutter and transitions in place and activation (by Supplier) when mulch and plant are added and temporary throat protection removed.

Activation cannot be carried out until the site is **fully** stabilized (full landscaping, grass cover, final paving and street sweeping completed). Maintenance visits are scheduled seasonally; the spring visit aims to clean up after winter loads including salts and sands. The fall visit helps the system by removing excessive leaf litter.

A first inspection to determine if maintenance is necessary should be performed at least twice annually after every major storm event of greater than (1) one inch total depth (subject to regional climate). Please refer to the maintenance checklist for specific conditions that indicate if maintenance is necessary.

It has been found that in regions which receive between 30-50 inches of annual rainfall, (2) two visits are generally required. Regions with less rainfall often only require (1) one visit per annum. Varying land uses can affect maintenance frequency; e.g. some fast food restaurants require more frequent trash removal. Contributing drainage areas which are subject to new development wherein the recommended erosion and sediment control measures have not been implemented require additional maintenance visits.

Some sites may be subjected to extreme sediment or trash loads, requiring more frequent maintenance visits. This is the reason for detailed notes of maintenance actions per unit, helping the Supplier and Owner predict future maintenance frequencies, reflecting individual site conditions.

Owners must promptly notify the (maintenance) Supplier of any damage to the plant(s), which constitute(s) an integral part of the bioretention technology. Owners should also advise other landscape or maintenance contractors to leave all maintenance to the Supplier (i.e. no pruning or fertilizing).

Exclusion of Services

It is the responsibility of the owner to provide adequate irrigation when necessary to the plant of the Filterra® system.

Clean up due to major contamination such as oils, chemicals, toxic spills, etc. will result in additional costs and are not covered under the Supplier maintenance contract. Should a major contamination event occur, the Owner must block off the outlet pipe of the Filterra® (where the cleaned runoff drains to, such as drop-inlet) and block off the throat of the Filterra®. The Supplier should be informed immediately.



Maintenance Visit Summary

Each maintenance visit consists of the following simple tasks (detailed instructions below).

1. Inspection of Filterra® and surrounding area
2. Removal of tree grate and erosion control stones
3. Removal of debris, trash and mulch
4. Mulch replacement
5. Plant health evaluation and pruning or replacement as necessary
6. Clean area around Filterra®
7. Complete paperwork

Maintenance Tools, Safety Equipment and Supplies

Ideal tools include: camera, bucket, shovel, broom, pruners, hoe/rake, and tape measure. Appropriate Personal Protective Equipment (PPE) should be used in accordance with local or company procedures. This may include impervious gloves where the type of trash is unknown, high visibility clothing and barricades when working in close proximity to traffic and also safety hats and shoes. A T-Bar or crowbar should be used for moving the tree grates (up to 170 lbs ea.).

Most visits require only replacement mulch. Three bags of double shredded mulch are used per unit (on a standard 6x6' size). Some visits may require additional Filterra® engineered soil media available from the Supplier.

Maintenance Visit Procedure



1. Inspection of Filterra® and surrounding area

- Record individual unit **before** maintenance with photograph (numbered). Record on Maintenance Report (see example in this document) the following:

Record on Maintenance Report the following:

Standing Water	yes no
Damage to Box Structure	yes no
Damage to Grate	yes no
Is Bypass Clear	yes no

If yes answered to any of these observations, record with close-up photograph (numbered).



2. Removal of tree grate and erosion control stones

- Remove metal grates for access into Filterra® box.
- Dig out silt (if any) and mulch and remove trash & foreign items.

Record on Maintenance Report the following:

Silt/Clay	yes no
Cups/ Bags	yes no
Leaves	yes no
# of Buckets Removed	



3. Removal of debris, trash and mulch

- After removal of mulch and debris, measure distance from the top of the Filterra® engineered media soil to the bottom of the top slab. If this distance is greater than 12", add Filterra® media (not top soil or other) to recharge to a 9" distance.

Record on Maintenance Report the following:

Distance to Bottom of Top Slab (inches)	
# of Buckets of Media Added	

Filterra® Stormwater Bioretention Filtration System

toll free: (866) 349 3458 | fax: (804) 798 8400 | maintenance@filterra.com | filterra.com



4. Mulch replacement

- Add double shredded mulch evenly across the entire unit to a depth of 3".
- Ensure correct repositioning of erosion control stones by the Filterra® inlet to allow for entry of trash during a storm event.
- Replace Filterra® grates correctly using appropriate lifting or moving tools, taking care not to damage the plant.



5. Plant health evaluation and pruning or replacement as necessary

- Examine the plant's health and replace if dead.
- Prune as necessary to encourage growth in the correct directions

Record on Maintenance Report the following:

Height above Grate	(feet)
Width at Widest Point	(feet)
Health	alive dead
Damage to Plant	yes no
Plant Replaced	yes no



6. Clean area around Filterra®

- Clean area around unit and remove all refuse to be disposed of appropriately.



7. Complete paperwork

- Deliver Maintenance Report and photographs to appropriate location (normally Americast during maintenance contract period).
- Some jurisdictions may require submission of maintenance reports in accordance with approvals. It is the responsibility of the Owner to comply with local regulations.

Maintenance Checklist

Drainage System Failure	Problem	Conditions to Check For	Conditions That Should Exist	Actions
Inlet	Excessive sediment or trash accumulation	Accumulated sediments or trash impair free flow of water into Filterra	Inlet should be free of obstructions allowing free distributed flow of water into Filterra.	Sediments and/or trash should be removed.
Mulch Cover	Trash and floatable debris accumulation	Excessive trash and/or debris accumulation.	Minimal trash or other debris on mulch cover.	Trash and debris should be removed and mulch cover raked level. Ensure bark nugget mulch is not used.
Mulch Cover	"Ponding" of water on mulch cover.	"Ponding" in unit could be indicative of clogging due to excessive fine sediment accumulation or spill of petroleum oils.	Stormwater should drain freely and evenly through mulch cover.	Recommend contact manufacturer and replace mulch as a minimum.
Vegetation	Plants not growing or in poor condition.	Soil/mulch too wet, evidence of spill. Incorrect plant selection. Pest infestation. Vandalism to plants.	Plants should be healthy and pest free.	Contact manufacturer for advice.
Vegetation	Plant growth excessive	Plants should be appropriate to the species and location of Filterra.		Trim/prune plants in accordance with typical landscaping and safety needs.
Structure	Structure has visible cracks	Cracks wider than 1/2 inch or evidence of soil particles entering the structure through the cracks.		Vault should be repaired.

Maintenance is ideally to be performed twice annually.
Inspection to be performed after every major storm event >1 inch total depth, subject to climate.

Filterra® Stormwater Bioretention Filtration System

toll free: (866) 349 3458 | fax: (804) 798 8400 | maintenance@filterra.com | filterra.com

Filtterra® Project Maintenance Order

Project

--

Address

--

Directions

--	--

Project

Company

Owner

Contact Name

--

Telephone #

[illegible]

Owner Notified

of Mtce on (date)

Filterra Units on this Order

Total Units on this Project


Date of Maintenance

Arrival Time

Departure Time

of Workers

Notes on Project



Maintenance Supervisor

Filtterra® Structure Maintenance Report

Project

Structure Number

Plant Type

Structure Size

Date

GPS

Pre Mtce Photo #

Initial Observations

Standing Water	<input type="checkbox"/> Y <input type="checkbox"/> N	Damage to Grate	<input type="checkbox"/> Y <input type="checkbox"/> N
IF Yes, STOP NOW & call 804-798-6068		Is Bypass Clear	<input type="checkbox"/> Y <input type="checkbox"/> N
Damage to Box Structure	<input type="checkbox"/> Y <input type="checkbox"/> N	Notes	
If YES to any observation take close up photo			

Waste

Silt / Clay	<input type="checkbox"/> Y <input type="checkbox"/> N	Buckets Removed (# of)	<input type="text"/>
Cups/Bags	<input type="checkbox"/> Y <input type="checkbox"/> N	Notes	
Leaves	<input type="checkbox"/> Y <input type="checkbox"/> N		
Other	<input type="text"/>		

Media

Distance to Bottom of Top Slab (in.)	<input type="text"/>	Notes	
Buckets of Media Added (# of)	<input type="text"/>		

Mulch

Netting Replaced	<input type="checkbox"/> Y <input type="checkbox"/> N	Bags of Mulch Added (# of)	<input type="text"/>
Stones Replaced	<input type="checkbox"/> Y <input type="checkbox"/> N	Notes	

Plant

	#1	(#2)		#1	(#2)
Height above Grate (feet)	<input type="text"/>	<input type="text"/>	Plant Replaced	<input type="checkbox"/> Y / <input type="checkbox"/> N	<input type="checkbox"/> Y / <input type="checkbox"/> N
Width at Widest Point (feet)	<input type="text"/>	<input type="text"/>	Notes		
Health	Alive/Dead	Alive/Dead			
Damage to Plant	<input type="checkbox"/> Y / <input type="checkbox"/> N	<input type="checkbox"/> Y / <input type="checkbox"/> N			
If YES to plant damage take close up photo					

Other Notes

(use back if necessary)



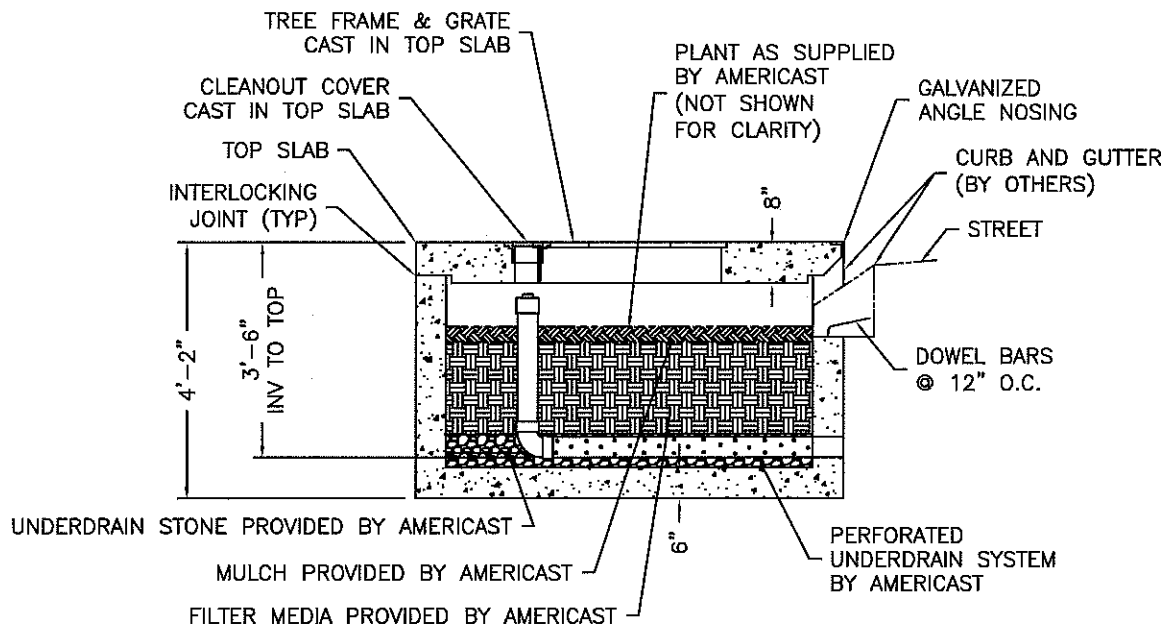
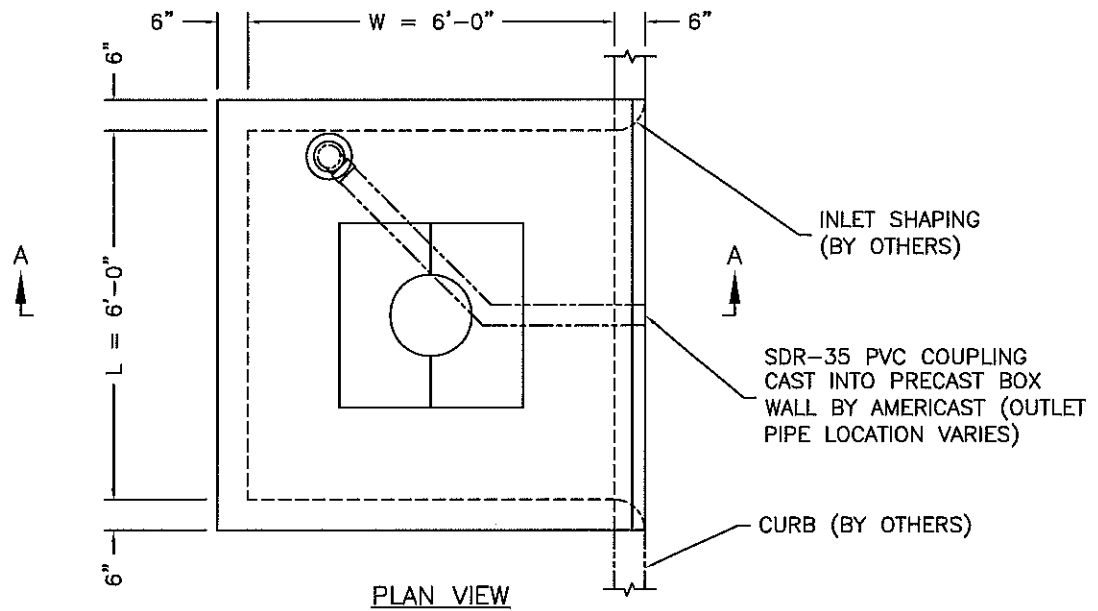
Filterra[®] Warranty

Seller warrants goods sold hereunder against defects in materials and workmanship only, for a period of (1) year from date the Seller activates the system into service. Seller makes no other warranties, express or implied.

Seller's liability hereunder shall be conditioned upon the Buyer's installation, maintenance, and service of the goods in strict compliance with the written instructions and specifications provided by the Seller. Any deviation from Seller's instructions and specifications or any abuse or neglect shall void warranties.

In the event of any claim upon Seller's warranty, the burden shall be upon the Buyer to prove strict compliance with all instructions and specifications provided by the Seller.

Seller's liability hereunder shall be limited only to the cost or replacement of the goods. Buyer agrees that Seller shall not be liable for any consequential losses arising from the purchase, installation, and/or use of the goods.



SECTION A-A

DESIGNATION	L	W	TREE GRATE QTY & SIZE	OUTLET PIPE
6 x 6	6'-0"	6'-0"	(1) 3x3	4" SDR-35 PVC

** SIZES SHOWN ARE FOR THE MID ATLANTIC AND MAY VARY ACROSS THE COUNTRY
PLEASE CONTACT FILTERRA FOR A LIST OF SIZES WITHIN YOUR REGION



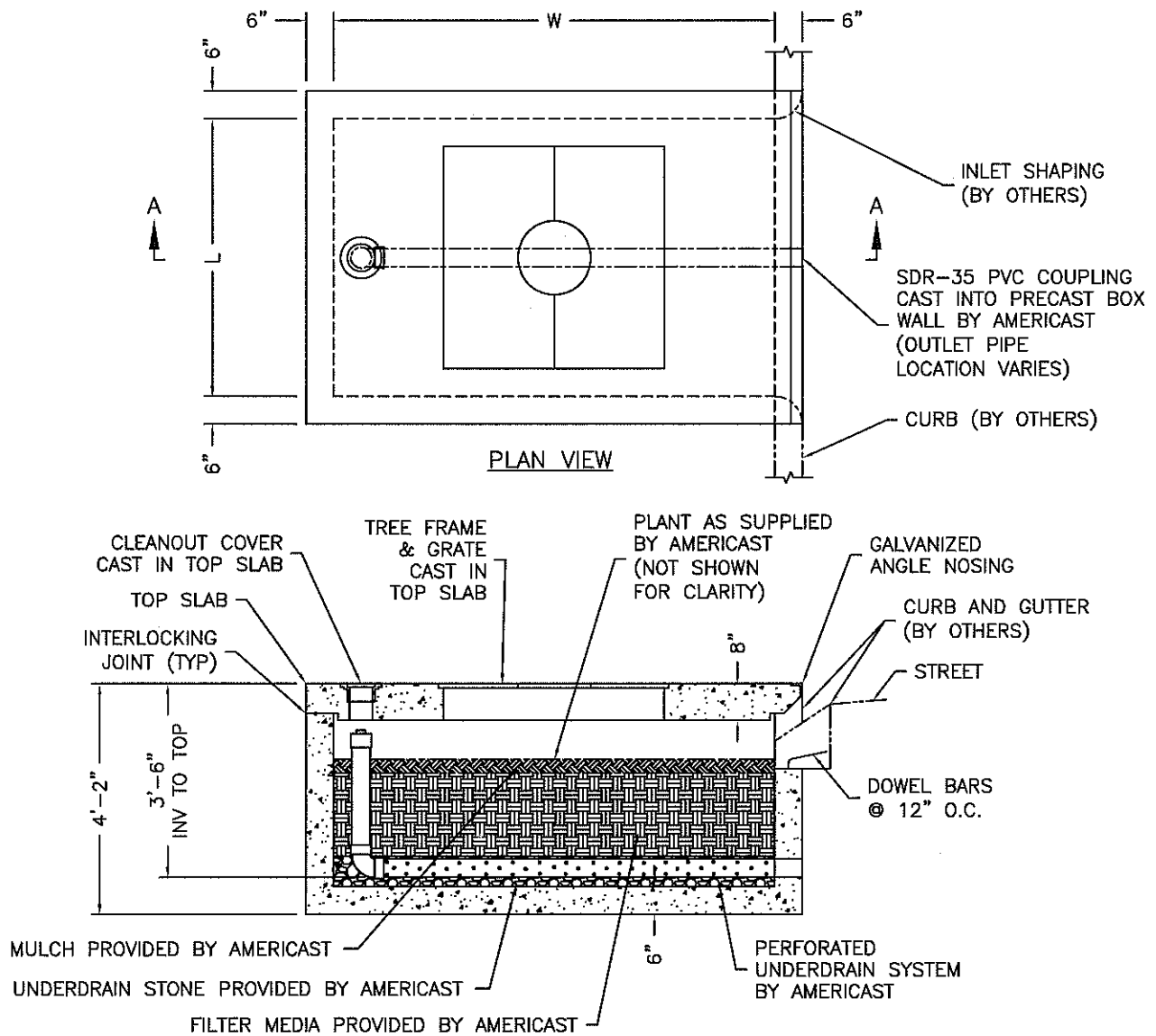
Copyright © 2007 by Americast

DATE: 07-07-06

DWG: FTST-2

**PRECAST FILTERRA® UNIT
STANDARD CONFIGURATION**





DESIGNATION	L	W	TREE GRATE QTY & SIZE	OUTLET PIPE
4 x 6	4'-0"	6'-0"	(1) 3x3	4" SDR-35 PVC
4 x 8	4'-0"	8'-0"	(1) 3x3	4" SDR-35 PVC
4 x 12	4'-0"	12'-0"	(2) 3x3	4" SDR-35 PVC
6 x 8	6'-0"	8'-0"	(1) 4x4	4" SDR-35 PVC
6 x 10	6'-0"	10'-0"	(1) 4x4	6" SDR-35 PVC
6 x 12	6'-0"	12'-0"	(2) 4x4	6" SDR-35 PVC
7 x 13	7'-0"	13'-0"	(2) 4x4	6" SDR-35 PVC

** SIZES SHOWN ARE FOR THE MID ATLANTIC AND MAY VARY ACROSS THE COUNTRY
PLEASE CONTACT FILTERRA FOR A LIST OF SIZES WITHIN YOUR REGION



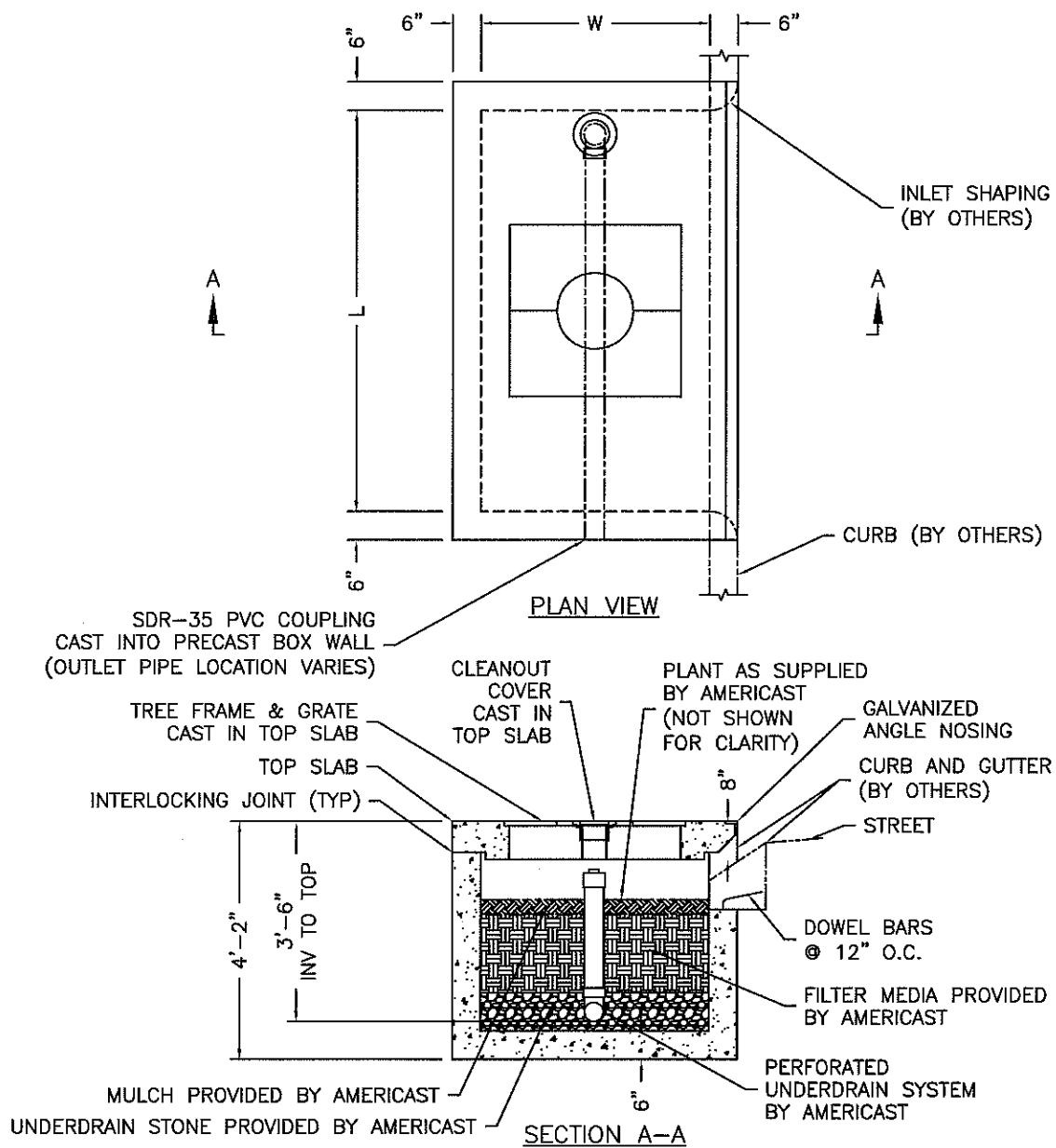
Copyright © 2007 by Americast

DATE: 09-04-07

DWG: FTNL-3

**PRECAST FILTERRA® UNIT
NARROW LENGTH CONFIGURATION**





DESIGNATION	L	W	TREE GRATE QTY & SIZE	OUTLET PIPE
6 x 4	6'-0"	4'-0"	(1) 3x3	4" SDR-35 PVC
8 x 4	8'-0"	4'-0"	(1) 3x3	4" SDR-35 PVC
8 x 6	8'-0"	6'-0"	(1) 4x4	4" SDR-35 PVC
10 x 6	10'-0"	6'-0"	(1) 4x4	6" SDR-35 PVC
12 x 4	12'-0"	4'-0"	(2) 3x3	4" SDR-35 PVC
12 x 6	12'-0"	6'-0"	(2) 4x4	6" SDR-35 PVC
13 x 7	13'-0"	7'-0"	(2) 4x4	6" SDR-35 PVC

** SIZES SHOWN ARE FOR THE MID ATLANTIC AND MAY VARY ACROSS THE COUNTRY
PLEASE CONTACT FILTERRA FOR A LIST OF SIZES WITHIN YOUR REGION



Copyright © 2007 by Americast

DATE: 09-04-07

DWG: FTNW-3

**PRECAST FILTERRA® UNIT
NARROW WIDTH CONFIGURATION**



Appendix E

Proposed Improvements (60% Plans)

WELLINGTON HILLS 240TH ST SE IMPROVEMENTS

UPI#12-0059-1

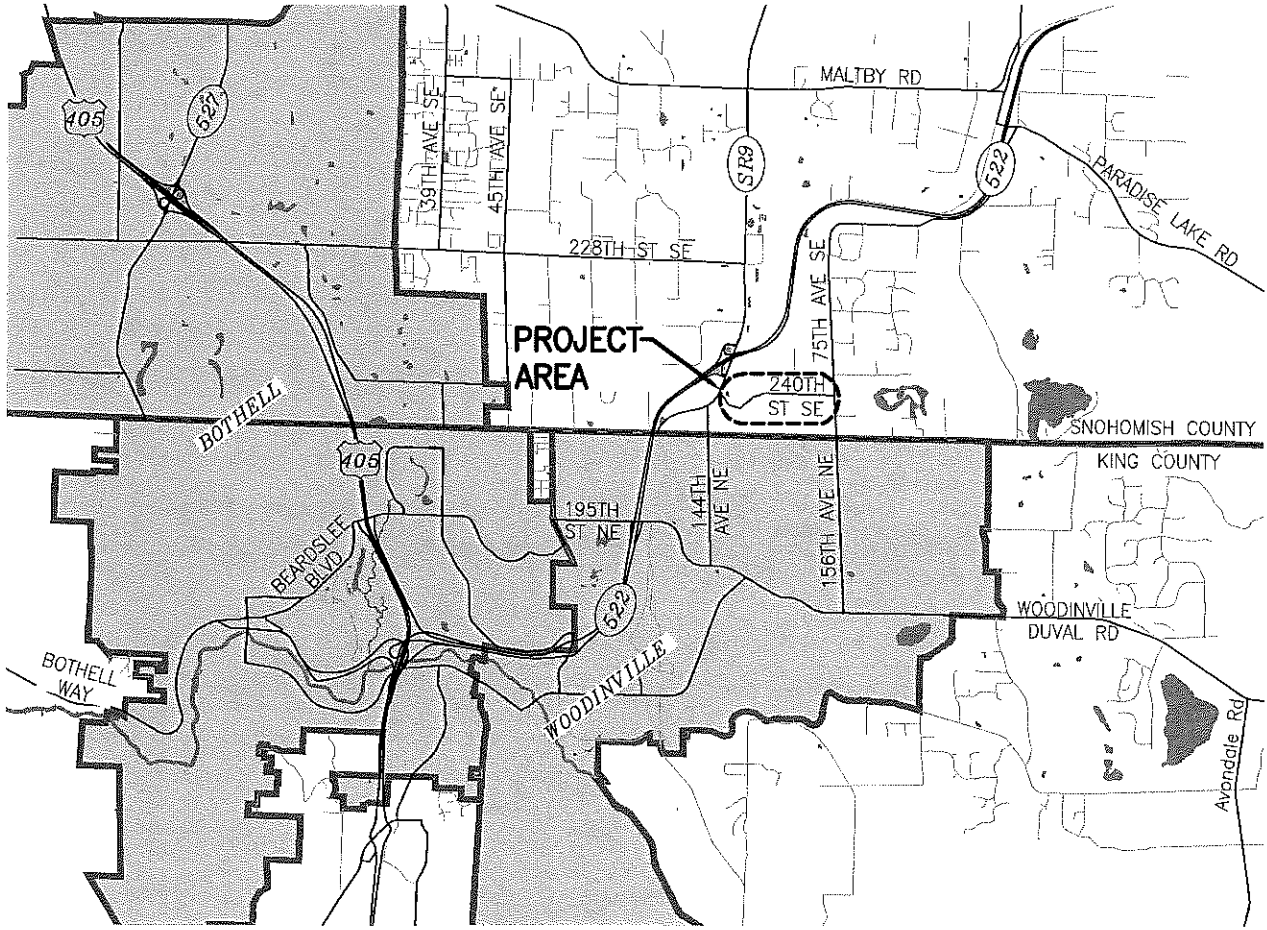
RR#9322

PRELIMINARY

60 PERCENT SUBMITTAL

SHEET INDEX

SHEET NAME	SHEET #	REF #
COVER SHEET	1	CV01
LEGEND/CONSTRUCTION NOTES	2	LGXX
TYPICAL ROADWAY SECTIONS	x	TSXX
SURVEY & ALIGNMENT CONTROL PLAN	x	CPXX
EROSION & SEDIMENT CONTROL PLAN/DETAILS	x	ECXX
ROADWAY PREPARATION PLAN	x	RPXX
PLAN AND PROFILE	x	PLXX
SUPER ELEVATION DIAGRAM	x	SUXX
MISCELLANEOUS DETAILS	x	DTXX
DRAINAGE DETAILS	x	DDXX
DRIVEWAY SCHEDULE	x	DSXX
LANDSCAPING PLAN	x	LSXX
SIGNAL PLANS	x	SPXX
CHANNELIZATION PLAN	x	CHXX
TRAFFIC CONTROL PLAN	x	TCXX
CROSS SECTIONS	x	XSXX



VICINITY MAP

N.T.S.



Snohomish County Officials

DIRECTOR OF PUBLIC WORKS
STEVEN E. THOMSEN, P.E.
































COUNTY ENGINEER
OWEN B. CARTER, P.E.

EXECUTIVE
JOHN LOVICK

COUNCIL MEMBERS
JOHN KOSTER – DIST. 1
BRIAN SULLIVAN – DIST. 2
STEPHANIE WRIGHT – DIST. 3
DAVE GOSSETT – DIST. 4
DAVE SOMERS – DIST. 5

S:\PW_Project_Data_Management\6-PROJECTS\UPI Year_2012\12-0059-12 CADD\2.1 production data\2.1 Drawings\Design\PSE\12-0059_LG.dwg, LG01, 8/22/2013 2:31:36 PM, spwbxc, 12

LEGEND

EXISTING SYMBOL	PROPOSED SYMBOL	DESCRIPTION
		FIRE HYDRANT
		CB TYPE I
		CB TYPE II
		UTILITY POLE
		GUY WIRE
		WATER VALVE
		WATER METER
		TELEPHONE RISER
		SANITARY SEWER MANHOLE
		PROP. MAILBOX
		PROP. SIGN
		STUMP
		SHRUB
		CONIFER TREE
		DECIDUOUS TREE
		ROCKERY
		UTILITY VAULT
		CONSTRUCTION NOTE
		PROP. RETAINING WALL
		PROP. GEOGRID RETAINING WALL WITH REINFORCEMENT
		PROP. ASPHALT THICKENED EDGE
		PROP. CHECK DAM
		OUTFALL PROTECTION
		HMA FOR APPROACH CL 1/2" PG 64-22
		STRUCTURE NOTE (PLAN) X = STRUCTURE NO. XXX = PLAN & PROFILE REF. SHEET

A.P.	ANGLE POINT
BOW	BACK OF SIDEWALK
BVC	BEGIN VERTICAL CURVE
CB	CATCH BASIN
C	CATCH BASIN
CONC	CONCRETE
CPCP	CORRUGATED POLYETHYLENE CULVERT PIPE
CPSSP	CORRUGATED POLYETHYLENE STORM SEWER PIPE
CSTC	CRUSHED SURFACING TOP COURSE
CVW	CROSS VALLEY WATER
DISSP	DUCTILE IRON STORM SEWER PIPE
DI CULV	DUCTILE IRON CULVERT
D/W	DRIVEWAY
ELEV	ELEVATION
EOP	EDGE OF PAVEMENT
EXIST. OR EX	EDGE OF PAVEMENT
FOC	FACE OF CURB
FTR	FRONTIER
GE	GRATE ELEVATION
IE	INVERT ELEVATION
LI	LINEAL FEET
LT	LEFT
MON	MONUMENT
NTS	NOT TO SCALE
RT	RIGHT
PSE	PUGET SOUND ENERGY
PUD	PUBLIC UTILITY DISTRICT #1
PVI	POINT OF VERTICAL INTERSECTION
R/W	RIGHT OF WAY
STA	STATION
TYP	TYPICAL
VC	VERTICAL CURVE
WV	WATER VALVE
YD	YARD DRAIN

1. ALL CATCH BASIN OFFSETS ARE TO THE CENTER OF STRUCTURE.

PRELIMINARY

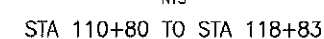
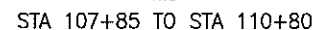
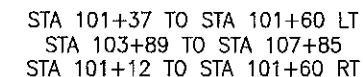
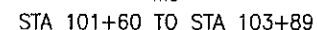
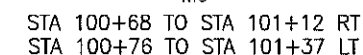
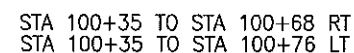
60 PERCENT SUBMITTAL

FUNDING NO. RR9322

REFERENCE SHEET NO. LG01	SHEET XX OF XX SHEETS
--------------------------------	-----------------------------------

S:\PW_Project_Data_Management\6-PROJECTS\UPI Year_2012\12-0059-12 CADD\2.1 production data\2.1 Drawings\Design\PSE\12-0059 TS.dwg, TS01, 8/27/2013 9:51:05 AM, spwsit, 1:2

- 1 0.17' COMPACTED DEPTH HMA CL 1/2 INCH, PG 64-22 (WEARING COURSE)
- 2 0.17' COMPACTED DEPTH HMA CL 1/2 INCH, PG 64-22 (LEVELING COURSE)
- 3 COMPACTED DEPTH VARIES, HMA FOR PRELEVEL, CL 3/8 INCH, PG 64-22
- 4 0.35' COMPACTED DEPTH HMA CL 1/2 INCH, PG 64-22
- 5 GRAVEL BORROW
- 6 CEMENT CONCRETE TRAFFIC CURB AND GUTTER (PER WSDOT STD PLAN R-10.12)
- 7 4" CEMENT CONCRETE SIDEWALK (SEE STD PLAN F SERIES AND DETAIL SHEET DT0.3)
- 8 EXISTING ACP PAVEMENT TO REMAIN
- 9 0.35' COMPACTED DEPTH CRUSHED SURFACING BASE COURSE
- 10 SAWCUT MAY VARY BASED ON FIELD CONDITIONS AS DIRECTED BY THE ENGINEER
- 11 CRUSHED SURFACING TOP COURSE, 0.25' COMPACTED DEPTH
- 12 NOT USED
- 13 NOT USED
- 14 NOT USED
- 15 TOPSOIL TYPE 'A', DEPTH AS NOTED
- 16 SEE SHEET SU01 FOR ROADWAY CROSS SLOPE



REFERENCE SHEET NO.	TS01
SHEET XX OF XX SHEETS	

S:\PW_Project_Data_Management\PROJECTS\UPL Year_2012\12-0059-12 CADD\2.1 production data\2.1 Drawings\Survey\4346SCAP.dwg, CP01 - Sheet 1, 8/15/2013 6:53:37 AM, spwsjl, 1:2

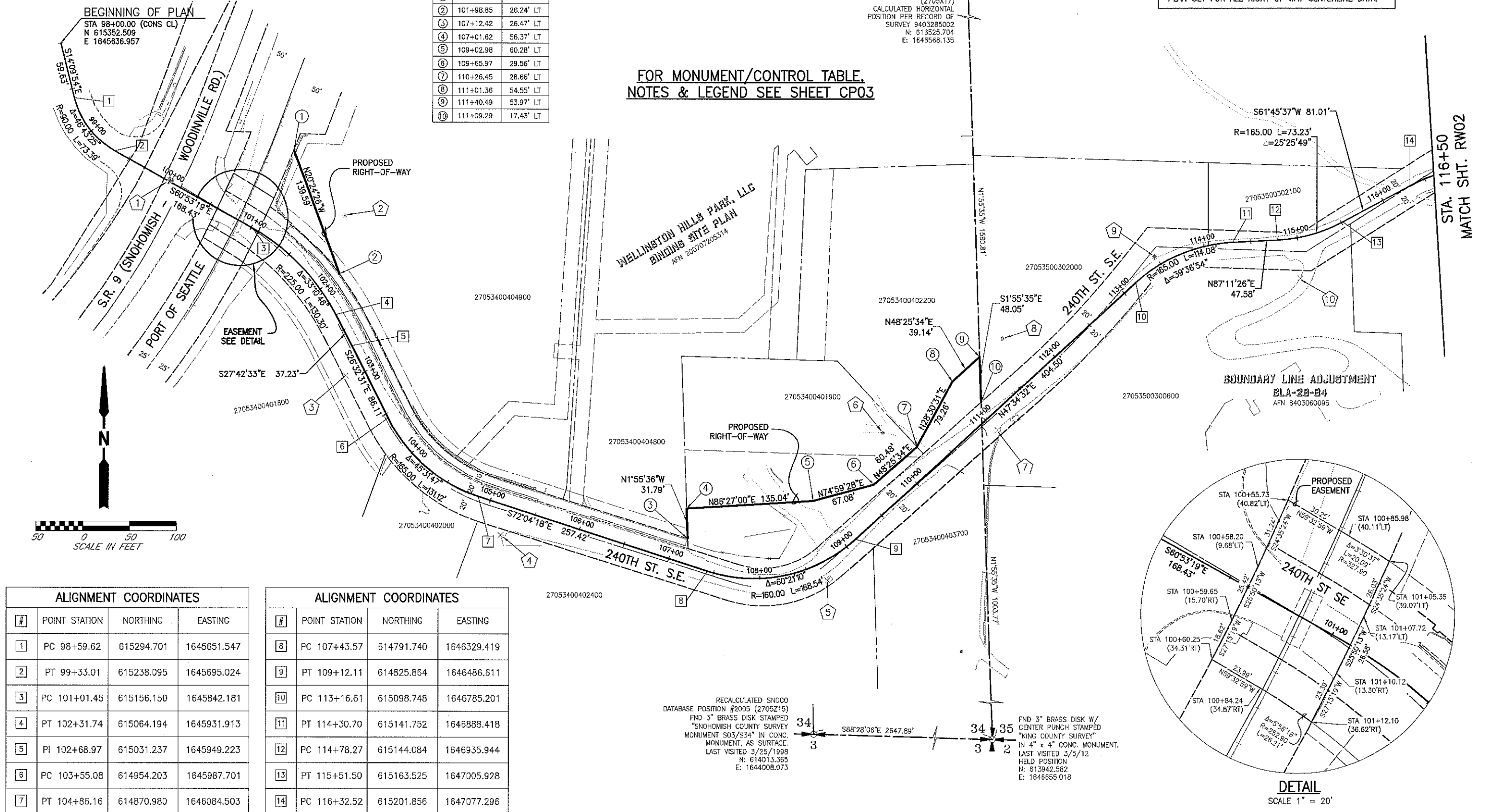
SECTIONS 34 & 35, T. 27 N., R. 5 E., W.M.

PROPOSED R/W OFFSETS		
①	101+00.67	93.69' LT
②	101+98.85	26.24' LT
③	107+12.42	26.47' LT
④	107+01.62	56.37' LT
⑤	109+02.98	60.28' LT
⑥	109+65.97	29.56' LT
⑦	110+26.45	28.66' LT
⑧	111+01.36	54.55' LT
⑨	111+40.49	53.97' LT
⑩	111+09.29	17.43' LT

RECALCULATED SNOCO
DATABASE POSITION #1977.
(2705X17)
CALCULATED HORIZONTAL
POSITION PER RECORD OF
SURVEY 9403285002
N: 618525.704
E: 1646568.135

NOTE:
ALL ALIGNMENTS AND STATIONING SHOWN IS BASED ON
CONSTRUCTION CENTERLINES. REFER TO RIGHT-OF-WAY
PLAN SET FOR ALL RIGHT OF WAY CENTERLINE DATA.

FOR MONUMENT/CONTROL TABLE
NOTES & LEGEND SEE SHEET CP03



ALIGNMENT COORDINATES			
#	POINT STATION	NORTHING	EASTING
1	PC 98+59.62	615294.701	1645651.547
2	PT 99+33.01	615238.095	1645695.024
3	PC 101+01.45	615156.150	1645842.181
4	PT 102+31.74	615064.194	1645931.913
5	PI 102+68.97	615031.237	1645949.223
6	PC 103+55.08	614954.203	1645987.701
7	PT 104+86.16	614870.980	1646084.503

ALIGNMENT COORDINATES			
#	POINT STATION	NORTHING	EASTING
8	PC 107+43.57	614791.740	1646329.419
9	PT 109+12.11	614825.864	1646486.611
10	PC 113+16.61	615098.748	1646785.201
11	PT 114+30.70	615141.752	1646888.418
12	PC 114+78.27	615144.084	1646935.944
13	PT 115+51.50	615163.525	1647005.928
14	PC 116+32.52	615201.856	1647077.296

RECALCULATED SNOCO
DATABASE POSITION #2005 (2705Z15)
FND 3" BRASS DISK STAMPED
"SNOHOMISH COUNTY SURVEY
MONUMENT S03/S34" IN CONC.
MONUMENT, AS SURFACE.
LAST VISITED 3/25/1998
N: 614013.365
E: 1644008.073

FND 3" BRASS DISK W/
CENTER PUNCH STAMPED
"KING COUNTY SURVEY"
IN 4" x 4" CONC. MONUMENT.
LAST VISITED 3/5/12
HELD POSITION
N: 613942.582
E: 1646655.018

Last Saved By: spwgrb Aug 14, 2013 - 9:47am			
REGION NO.	STATE	FED. AID PROJ. NO.	SURVEY NO.
10	WASH.		4346
DESIGNED BY:	DRAWN BY:		
BAC	GRB		
FIELD BOOK(S):	UPI#		
1744, 1745, 1746, 1747	12-0059-1		
DATE	NO.	REVISION	BY

PRELIMINARY

60 PERCENT SUBMITTAL

APPROVED FOR CONSTRUCTION

OWEN B. CARTER, P.E.
SNOHOMISH COUNTY ENGINEER

DATE APPROVED:

SNOHOMISH COUNTY
DEPARTMENT OF
PUBLIC WORKS

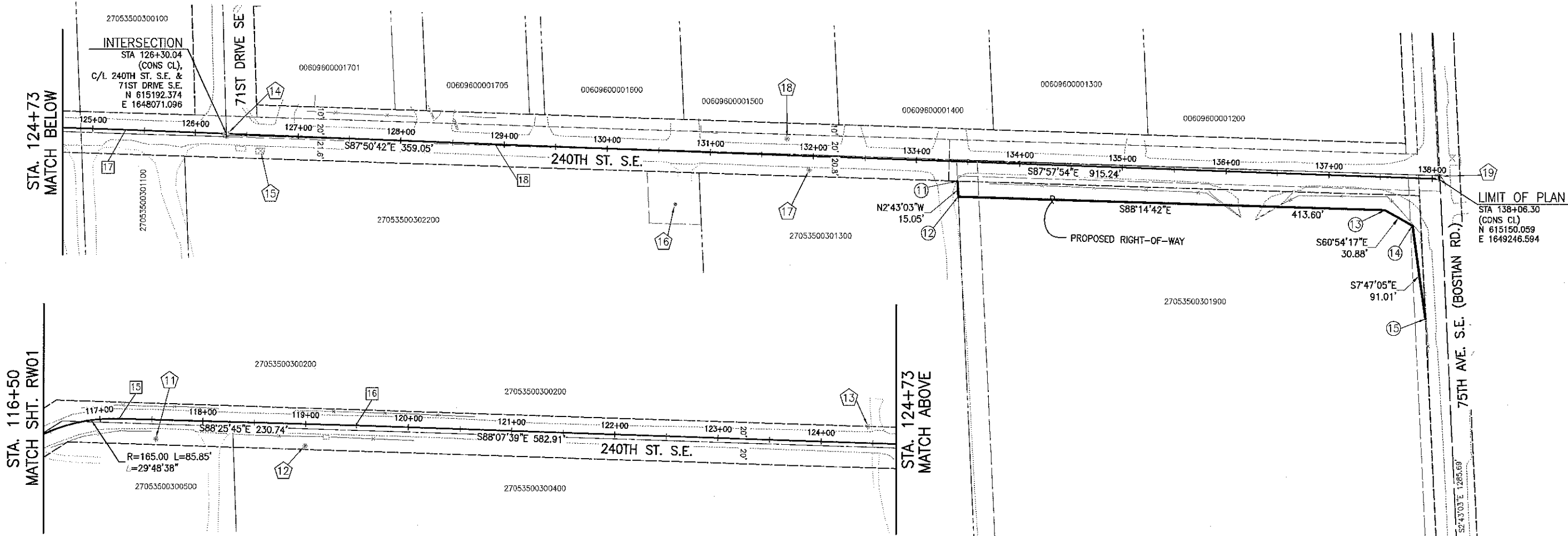
FUNDING NO. RR9322

240TH STREET SE
ROADWAY IMPROVEMENTS
SURVEY CONTROL &
ALIGNMENT PLAN

REFERENCE
SHEET NO.
CP01
SHEET
1
OF
3
SHEETS

S:\PW_Project_Data_Management\6-PROJECTS_UPI Year_2012\12-0059-112 CADD\12.1 production data\2.1 Drawings\Survey\4346SCAP.dwg, CP02 - Sheet 2, 8/15/2013 6:53:42 AM, spwslt, 1:2

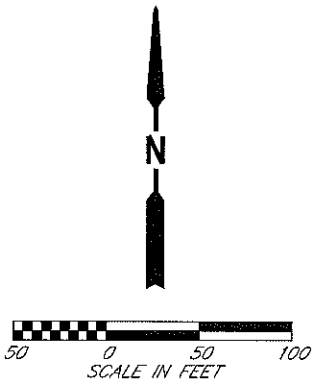
SECTIONS 34 & 35, T. 27 N., R. 5 E., W.M.



ALIGNMENT COORDINATES			
#	POINT STATION	NORTHING	EASTING
15	PT 117+18.36	615221.433	1647159.891
16	PI 119+49.10	615215.108	1647390.539
17	PI 125+32.01	615196.060	1647973.141
18	PI 128+91.06	615182.559	1648331.933

PROPOSED R/W OFFSETS		
①	133+40.60	18.93' RT
②	133+41.85	33.93' RT
③	137+55.44	31.91' RT
④	137+82.95	45.96' RT
⑤	137+98.47	135.63' RT

NOTE:
ALL ALIGNMENTS AND STATIONING SHOWN IS BASED ON
CONSTRUCTION CENTERLINES. REFER TO RIGHT-OF-WAY
PLAN SET FOR ALL RIGHT OF WAY CENTERLINE DATA.



FOR MONUMENT/CONTROL TABLE.
NOTES & LEGEND SEE SHEET CP03

FND "4" IN 3" BRASS
DISK IN CONC. MONUMENT,
STAMPED "SEC 2-35 KING
COUNTY", CASED DOWN 0.9'.
LAST VISITED 2/28/12
HELD POSITION
N: 613869.133
E: 1649308.353

Last Saved By: spwgrb Aug 14, 2013 - 9:47am			
REGION NO.	STATE	FED. AID PROJ. NO.	SURVEY NO.
10	WASH.		4346
DESIGNED BY:	DRAWN BY:		
BAC	GRB		
FIELD BOOK(S):	UPI#		
1744, 1745, 1746, 1747	12-0059-1		
DATE	NO.	REVISION	BY

PRELIMINARY
60 PERCENT SUBMITTAL

APPROVED FOR CONSTRUCTION
OWEN B. CARTER, P.E.
SNOHOMISH COUNTY ENGINEER
DATE APPROVED:

SNOHOMISH COUNTY
DEPARTMENT OF
PUBLIC WORKS
FUNDING NO. RR9322

240TH STREET SE
ROADWAY IMPROVEMENTS
SURVEY CONTROL &
ALIGNMENT PLAN

REFERENCE
SHEET NO.
CP02
SHEET
2
OF
3
SHEETS

S:\PW_Project_Data_Management\6-PROJECTS\UPI Year_2012\12-0059-12 CADD\2.1 production data\2.1 Drawings\Survey\4346SCAP.dwg, CP03 - Sheet 3, 8/15/2013 6:53:44 AM, spwjt, 1:2

SECTIONS 34 & 35, T. 27 N., R. 5 E., W.M.

MONUMENT/CONTROL TABLE						
#	STATION	OFFSET	NORTHING	EASTING	ELEVATION	DESCRIPTION & FIELD BOOK
1	99+99.98	1.69' LT	615206.990	1645754.357	161.00	FND CONC. MON. W/ BRASS CAP W/ PUNCH, DOWN 0.5'. 511/1747
2	101+63.16	71.31' LT	615169.731	1645941.606	217.60	SET REBAR, 501/1747
3	102+94.55	20.01' RT	614999.410	1645942.750	181.16	SET MAG NAIL, 681/1744
4	105+21.59	31.94' RT	614829.685	1646108.387	204.93	SET PK NAIL, 691/1744
5	108+65.84	19.74' RT	614782.221	1646457.056	261.10	SET PK NAIL, 701/1744
6	110+10.06	63.87' LT	614939.086	1646515.824	296.60	SET SPIKE, 431/1747
7	111+02.34	16.18' RT	614942.256	1646637.948	299.91	SET PK NAIL, 702/1744
8	111+71.94	51.81' LT	615039.396	1646643.460	323.17	SET REBAR, 591/1746
9	113+48.70	10.33' LT	615126.790	1646805.477	331.62	SET REBAR, 703/1744
10	114+96.46	42.95' RT	615103.566	1646960.835	352.50	SET MAG NAIL, 481/1747

MONUMENT/CONTROL TABLE						
#	STATION	OFFSET	NORTHING	EASTING	ELEVATION	DESCRIPTION & FIELD BOOK
11	117+54.35	18.68' RT	615201.771	1647195.350	369.02	SET REBAR, 711/1744
12	119+00.13	21.21' RT	615195.252	1647341.013	384.09	SET REBAR, 712/1744
13	124+44.38	16.07' LT	615214.989	1647886.081	395.09	SET REBAR, 261/1745
14	126+30.12	1.19' RT	615191.181	1648071.132	404.52	FND CONC. MON. IN CASE W/ TACK IN LEAD, DOWN 1.3'. 271/1745
15	126+63.80	15.25' RT	615175.866	1648104.260	407.35	SET MAG NAIL, 311/1745
16	130+68.17	51.32' RT	615124.985	1648507.114	440.11	SET SPIKE, 551/1745
17	131+96.35	13.50' RT	615158.229	1648636.559	445.97	SET REBAR, 272/1745
18	131+73.98	15.95' LT	615188.448	1648615.244	445.49	SET REBAR, 461/1747
19	138+05.81	3.34' LT	615153.412	1649246.229	452.13	FND CONC. MON. IN CASE W/ TACK IN LEAD, DOWN 1.1'. 282/1745



DATUM REFERENCES:

NAVD 88 VERTICAL DATUM: DATUM CONVERSION FOR PROJECT: NAVD
88 (-) NGVD 29 = 1.106 m OR 3.63 feet

HORIZONTAL DATUM: PROJECT DATUM, BASED ON CONVERTING STATE
PLANE COORDINATES, (WASHINGTON NORTH ZONE, NAD 83/2007
ADJUSTMENT) BY SCALING UP DRAWING AT BASE POINT 0,0 AND USING
A MULTIPLICATION FACTOR OF 1.000047222 AND MOVING 100,000
METERS NORTH & 100,000 METERS EAST.

TO OBTAIN STATE PLANE GRID DISTANCES FROM PROJECT DATUM
DISTANCES, SHOWN, MULTIPLY BY THE PROJECT COMBINED GRID FACTOR
OF 0.99995278.

BENCHMARKS:

✦ SNOCO DATABASE POINT ID 1714
BM31522-53 - ELEVATION 188.01
WSDOT BRASS DISK SET INTO THE SOUTH END OF THE WEST SIDE WALK AND LEVEL
WITH THE CONCRETE SURFACE. LOCATED IN THE SOUTHEAST QUADRANT OF THE
JUNCTION OF SR 522 AND SR 9.

✦ SNOCO DATABASE POINT ID 1711
GP31522-146 - ELEVATION 134.58
WSDOT BRASS DISK SET INTO THE TOP OF A CONCRETE MONUMENT AND UNDER A
WSDOT MONUMENT CASE AND COVER WHICH IS SET LEVEL WITH GRAVEL SURFACE.
FROM THE JUNCTION OF SR 9 AND SR 522, GO WESTERLY 0.36 MILES ALONG SR 522
TO MARK ON RIGHT. LOCATED ON THE NORTHERLY GRAVEL SHOULDER OF SR 522,
APPROXIMATELY 30 METERS EASTERLY OF THE EASTERLY END OF A BEAM GUARDRAIL.

REFERENCE

SNOHOMISH COUNTY SURVEY 3603.
SNOHOMISH COUNTY SURVEY 442.

LEGEND

---	SECTION LINE
----	QUARTER SECTION LINE
-----	1/16TH SECTION LINE
-----	RIGHT-OF-WAY CENTERLINE (RWCL)
-----	CONSTRUCTION CENTERLINE (CONS CL)
-----	PROPOSED EASEMENT LINE
-----	PROPOSED R/W LINE
-----	EXISTING RIGHT-OF-WAY
-----	PARCEL LINE
-----	EXISTING EASEMENT LINE
-----	HISTORICAL RIGHT-OF-WAY
-----	EDGE OF ASPHALT
-----	EDGE OF GRAVEL
-----	EXISTING FENCE
-----	CURB LINE
-----	RAILROAD
-----	FOUND MONUMENT IN CASE
-----	SET PK OR MAG NAIL, AS NOTED
-----	SET REBAR & CAP
-----	SET SPIKE
-----	PAGE NO./FIELD BOOK NO.
-----	QUARTER SECTION CORNER (CALCULATED)
-----	QUARTER SECTION CORNER (FOUND)
-----	SECTION CORNER (FOUND)

Last Saved By: spwgrb Aug 14, 2013 - 9:47am									
REGION NO.		STATE		FED. AID PROJ. NO.				SURVEY NO.	
10		WASH.						4346	
DESIGNED BY:						DRAWN BY:			
BAC						GRB			
FIELD BOOK(S):								UPI#	
1744, 1745, 1746, 1747								12-0059-1	
DATE		NO.		REVISION				BY	

PRELIMINARY

60 PERCENT SUBMITTAL

APPROVED FOR CONSTRUCTION

OWEN B. CARTER, P.E.
SNOHOMISH COUNTY ENGINEER

DATE APPROVED:

SNOHOMISH COUNTY
DEPARTMENT OF
PUBLIC WORKS

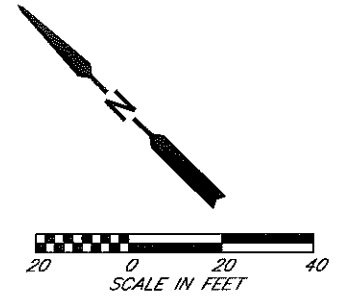
FUNDING NO. RR9322

240TH STREET SE
ROADWAY IMPROVEMENTS
SURVEY CONTROL &
ALIGNMENT PLAN

REFERENCE
SHEET NO.
CP03

SHEET
3
OF
3
SHEETS

PLAN LIMITS
STA. 99+00



- 1 INSTALL SILT FENCE
- 2 INSTALL HIGH VISIBILITY FENCE
- 3 INSTALL INLET PROTECTION
- 4 INSTALL TRIANGULAR SILT DIKE EVERY 25 FT.

☀ STORM DRAIN INLET PROTECTION, SEE SHEET
EC5 AND NOTE #3 THIS SHEET

➡ STORMWATER ENTERING/LEAVING SITE

CALL 2 DAYS
BEFORE YOU DIG
811
(UNDERGROUND UTILITY LOCATIONS
ARE APPROXIMATE)

PLAN CHECK	BY	DATE						Last Saved By: spws/jt Dec 17, 2013 -- 8:22am				
								REGION NO.	STATE	FED. AID PROJ. NO.	SURVEY NO.	
								10	WASH.		4346	
								DESIGNED BY: BAC		DRAWN BY: SJT		
								FIELD BOOK(S):		UPI# 12-0059-1		
			DATE	NO.	REVISION	BY						

60 PERCENT SUBMITTAL

FUNDING NO. RR9322

T.E.S.C. PLAN



REFERENCE
SHEET NO.
EC01

SHEET
XX
OF
XX
SHEETS

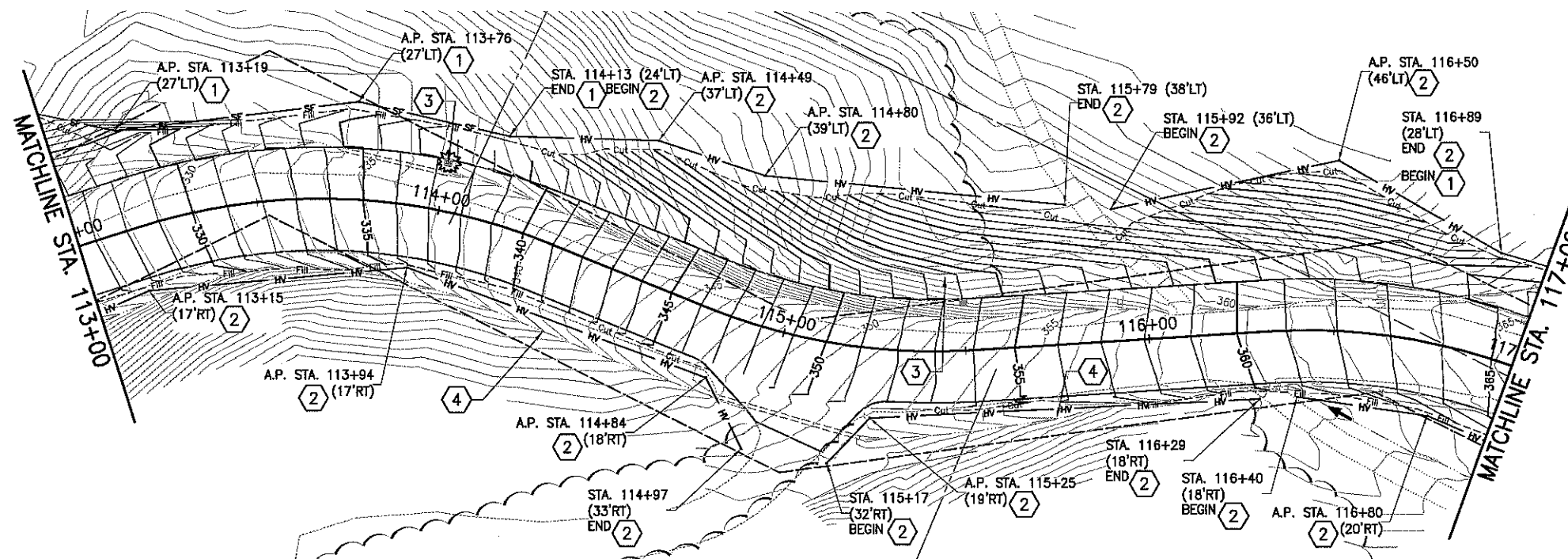


- 1 INSTALL SILT FENCE
- 2 INSTALL HIGH VISIBILITY FENCE
- 3 INSTALL INLET PROTECTION
- 4 INSTALL TRIANGULAR SILT DIKE EVERY 25 FT.

LEGEND:

-  STORM DRAIN INLET PROTECTION, SEE SHEET EC5 AND NOTE #3 THIS SHEET
-  STORMWATER ENTERING/LEAVING SITE

CALL 2 DAYS
BEFORE YOU DIG
811
(UNDERGROUND UTILITY LOCATIONS
ARE APPROXIMATE)



PLAN CHECK	BY	DATE								Last Saved By: spwsjt Dec 17, 2013 -- 8:22am			
										REGION NO.	STATE	FED. AID PROJ. NO.	SURVEY NO.
										10	WASH.		4346
										DESIGNED BY: BAC		DRAWN BY: SJT	
										FIELD BOOK(S):		UPI# 12-0059-1	
			DATE	NO.	REVISION			BY					

PRELIMINARY

60 PERCENT SUBMITTAL

SNOHOMISH COUNTY
DEPARTMENT OF
PUBLIC WORKS

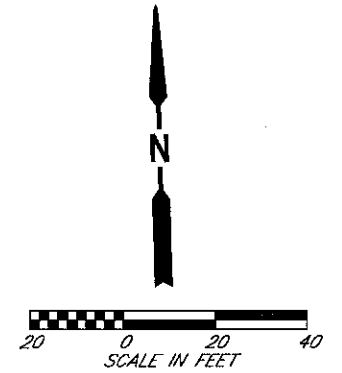
FUNDING NO. RR9322

WELLINGTON HILLS
240TH ST SE IMPROVEMENTS

T.E.S.C. PLAN

REFERENCE SHEET NO.	EC2
SHEET XX OF XX SHEETS	

S:\PW_Project_Data_Management\6-PROJECTS\UPI Year_2012\12-0059-12 CADD\2.1 production data\2.1 Drawings\Design\PSEI12-0059_EC.dwg, EC03, 12/17/2013 8:22:49 AM, spwsjt, 1:2



- 1 INSTALL SILT FENCE
- 2 INSTALL HIGH VISIBILITY FENCE
- 3 INSTALL INLET PROTECTION
- 4 INSTALL TRIANGULAR SILT DIKE EVERY 25 FT.

STORM DRAIN INLET PROTECTION, SEE SHEET
EC5 AND NOTE #3 THIS SHEET

→ STORMWATER ENTERING/LEAVING SITE

CALL 2 DAYS
BEFORE YOU DIG
811
(UNDERGROUND UTILITY LOCATIONS
ARE APPROXIMATE)

PRELIMINARY
60 PERCENT SUBMITTAL

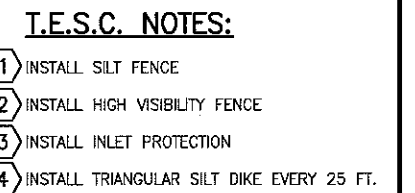
FUNDING NO. RR9322

T.E.S.C. PLAN

REFERENCE
SHEET NO.
EC03

SHEET
XX
OF
XX
SHEETS

20 0 20 40
SCALE IN FEET



STORM DRAIN INLET PROTECTION, SEE SHEET
EC5 AND NOTE #3 THIS SHEET

STORMWATER ENTERING/LEAVING SITE

CALL 2 DAYS
BEFORE YOU DIG
811
(UNDERGROUND UTILITY LOCATIONS
ARE APPROXIMATE)

[illegible]

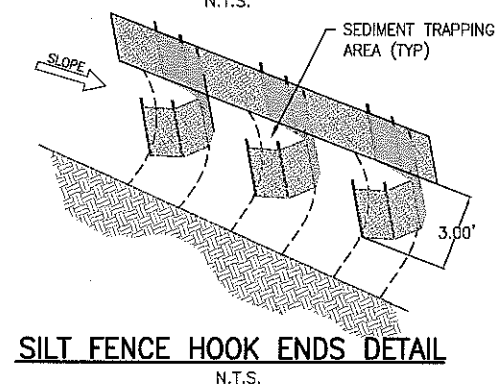
60 PERCENT SUBMITTAL

FUNDING NO. RR9322

T.E.S.C. PLAN

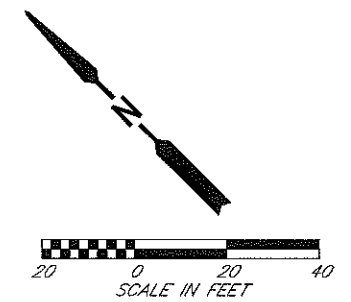
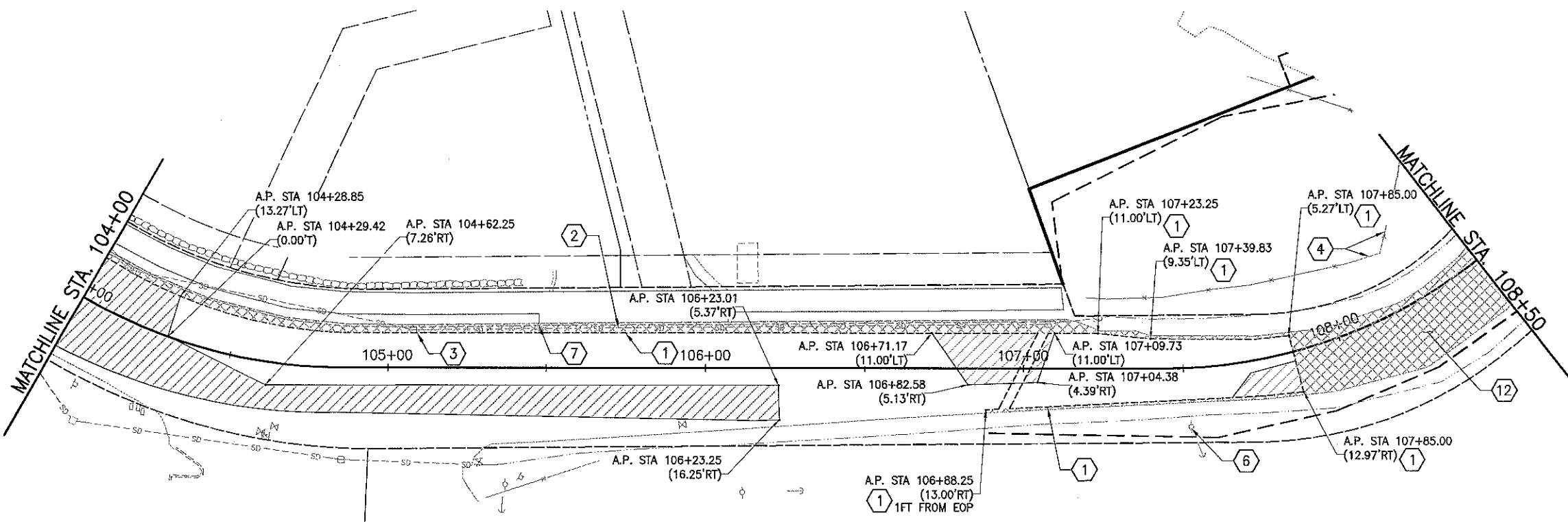
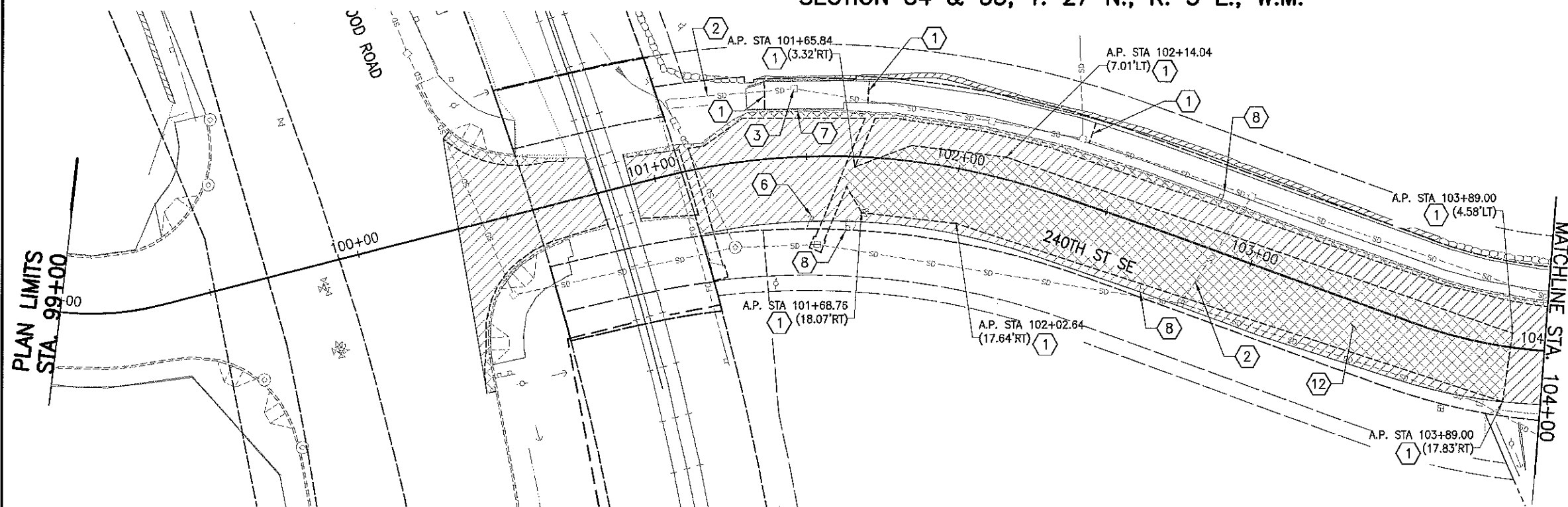
REFERENCE
SHEET NO.
EC04

SHEET
XX
OF
XX
SHEETS



REFERENCE
SHEET NO.
EC05




SHEET
XX
OF
XX
SHEETS



SITE PREPARATION NOTES:

- 1 SAWCUT EXISTING PAVEMENT
- 2 REMOVE EXISTING PIPE
- 3 REMOVE EXISTING DRAINAGE STRUCTURE
- 4 REMOVE EXISTING FENCE
- 5 PROTECT AND MAINTAIN EXISTING DRAINAGE PIPE OR STRUCTURE
- 6 UTILITY TO BE RELOCATED BY OTHERS
- 7 REMOVE EXISTING CURB AND GUTTER
- 8 REMOVE/RELOCATE EXISTING SIGN
- 9 REMOVE/RELOCATE MAILBOXES AS DIRECTED BY ENGINEER. SEE SPECIAL PROVISIONS AND CHANNELIZATION PLAN
- 10 REMOVE EXISTING PAVEMENT MARKINGS
- 11 WATER METER TO BE REMOVED AND RESET BY OTHERS
- 12 PAVEMENT REMOVAL, INCLUDED IN ROADWAY EXCAVATION INCL. HAUL

LEGEND

- | | |
|---|-------------------------------------|
|  | AREA OF PAVEMENT REMOVAL |
|  | AREA OF PLANING BITUMINOUS PAVEMENT |
|  | CLEARING LIMITS |

PLAN CHECK	BY	DATE								Last Saved By: spwbxc Aug 22, 2013 - 2:43pm				
										REGION NO.	STATE	FED. AID PROJ. NO.	SURVEY NO.	
										10	WASH.		4346	
										DESIGNED BY: BAC		DRAWN BY: SJT		
										FIELD BOOK(S):		UPI# 12-0059-1		
			DATE	NO.	REVISION				BY					

PRELIMINARY

60 PERCENT SUBMITTAL

SNOHOMISH COUNTY
DEPARTMENT OF
PUBLIC WORKS

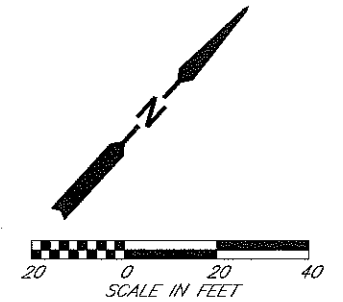
FUNDING NO. RR9322

WELLINGTON HILLS
240TH ST SE IMPROVEMENTS

ROAD PREPARATION PLAN

REFERENCE
SHEET NO.
RP01

SHEET
XX
OF
XX
SHEETS



- 1 SAWCUT EXISTING PAVEMENT
- 2 REMOVE EXISTING PIPE
- 3 REMOVE EXISTING DRAINAGE STRUCTURE
- 4 REMOVE EXISTING FENCE
- 5 PROTECT AND MAINTAIN EXISTING DRAINAGE PIPE OR STRUCTURE
- 6 UTILITY TO BE RELOCATED BY OTHERS
- 7 REMOVE EXISTING CURB AND GUTTER
- 8 REMOVE/RELOCATE EXISTING SIGN
- 9 REMOVE/RELOCATE MAILBOXES AS DIRECTED BY ENGINEER. SEE SPECIAL PROVISIONS AND CHANNELIZATION PLAN
- 10 REMOVE EXISTING PAVEMENT MARKINGS
- 11 WATER METER TO BE REMOVED AND RESET BY OTHERS
- 12 PAVEMENT REMOVAL, INCLUDED IN ROADWAY EXCAVATION INCL. HAUL

 AREA OF PAVEMENT REMOVAL
 AREA OF PLANING BITUMINOUS PAVEMENT
 CLEARING LIMITS

PLAN CHECK	BY	DATE								Last Saved By: spwbxc Aug 22, 2013 - 2:43pm				
										REGION NO.	STATE	FED. AID PROJ. NO.	SURVEY NO.	
										10	WASH.		4346	
										DESIGNED BY: BAC		DRAWN BY: SJT		
										FIELD BOOK(S):		UPI# 12-0059-1		
			DATE	NO.	REVISION				BY					

60 PERCENT SUBMITTAL

FUNDING NO. RR9322

WELLINGTON HILLS
240TH ST SE IMPROVEMENTS

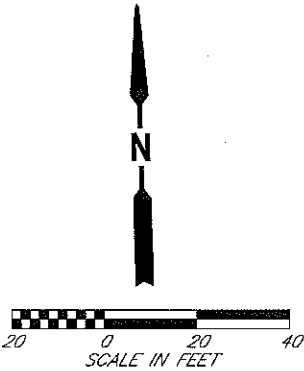
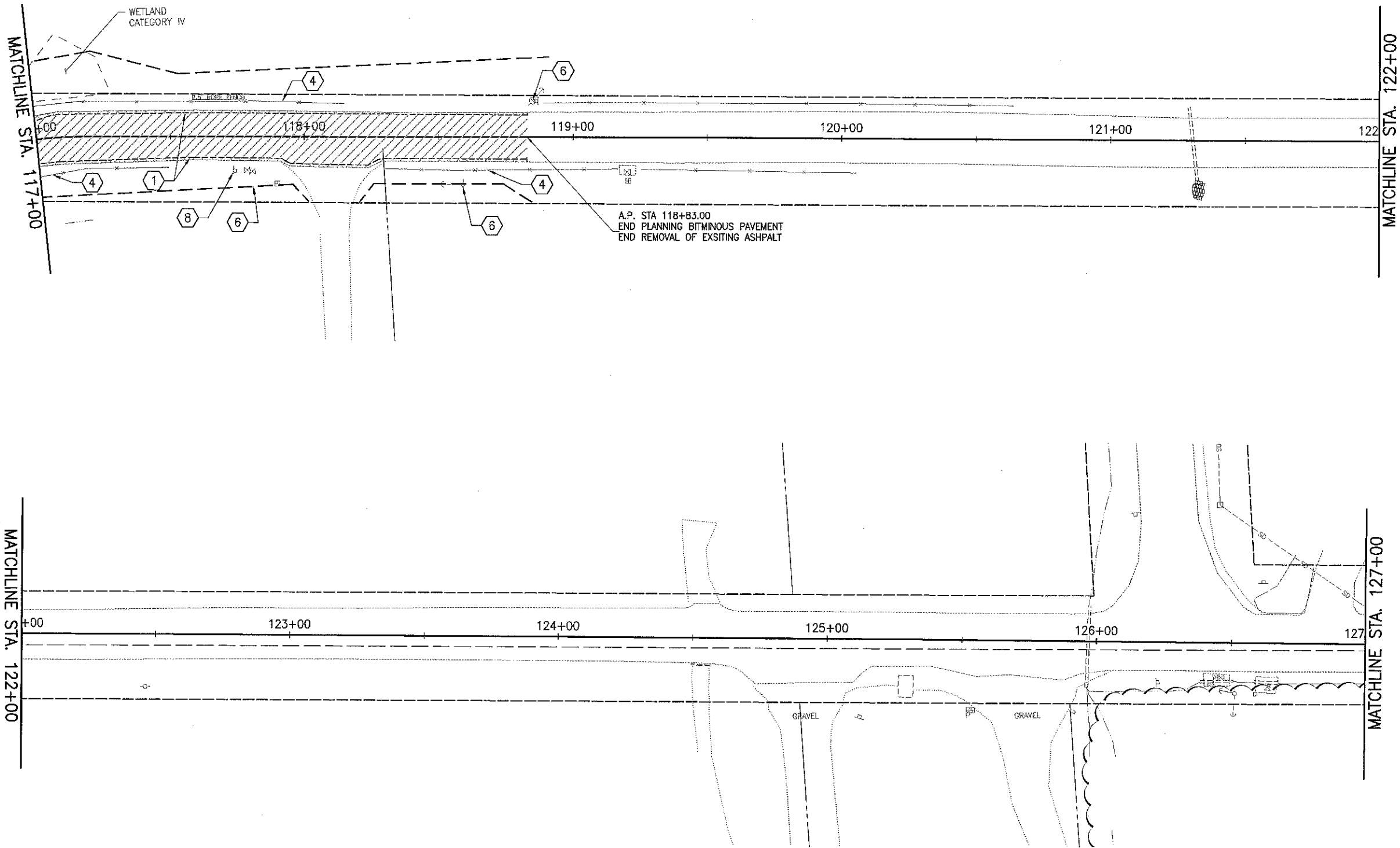
ROAD PREPARATION PLAN

REFERENCE
SHEET NO.
RP02

SHEET
XX
OF
XX
SHEETS

S:\PW_Project_Data_Management\6-PROJECTS\UPI Year_2012\12-0059-1\2 CADD\2.1 production data\2.1 Drawings\Design\PS\12-0059_RP.dwg, RP03, 8/22/2013 2:44:42 PM, spwbxc, 1:2

SECTION 34 & 35, T. 27 N., R. 5 E., W.M.



SITE PREPARATION NOTES:

- 1 SAWCUT EXISTING PAVEMENT
- 2 REMOVE EXISTING PIPE
- 3 REMOVE EXISTING DRAINAGE STRUCTURE
- 4 REMOVE EXISTING FENCE
- 5 PROTECT AND MAINTAIN EXISTING DRAINAGE PIPE OR STRUCTURE
- 6 UTILITY TO BE RELOCATED BY OTHERS
- 7 REMOVE EXSITING CURB AND GUTTER
- 8 REMOVE/RELOCATE EXISTING SIGN
- 9 REMOVE/RELOCATE MAILBOXES AS DIRECTED BY ENGINEER. SEE SPECIAL PROVISIONS AND CHANNELIZATION PLAN
- 10 REMOVE EXISTING PAVEMENT MARKINGS
- 11 WATER METER TO BE REMOVED AND RESET BY OTHERS
- 12 PAVEMENT REMOVAL, INCLUDED IN ROADWAY EXCAVATION INCL. HAUL

LEGEND

- AREA OF PAVEMENT REMOVAL
- AREA OF PLANING BITUMINOUS PAVEMENT
- CLEARING LIMITS

PLAN CHECK	BY	DATE	DATE	NO.	REVISION	BY

Last Saved By: spwbxc Aug 22, 2013 - 2:43pm			
REGION NO.	STATE	FED. AID PROJ. NO.	SURVEY NO.
10	WASH.		4346
DESIGNED BY: BAC		DRAWN BY: Sjt	
FIELD BOOK(S):		UPI# 12-0059-1	

PRELIMINARY

60 PERCENT SUBMITTAL

SNOHOMISH COUNTY
DEPARTMENT OF
PUBLIC WORKS

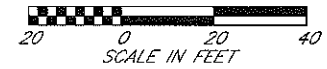
FUNDING NO. RR9322

WELLINGTON HILLS
240TH ST SE IMPROVEMENTS

ROAD PREPARATION PLAN

REFERENCE
SHEET NO.
RP03

SHEET
XX
OF
XX
SHEETS



MATCHLINE STA. 127+00

MATCHLINE STA. 133+00

MATCHLINE STA. 133+00

PROJECT LIMITS

SITE PREPARATION NOTES:

- 1 SAWCUT EXISTING PAVEMENT
- 2 REMOVE EXISTING PIPE
- 3 REMOVE EXISTING DRAINAGE STRUCTURE
- 4 REMOVE EXISTING FENCE
- 5 PROTECT AND MAINTAIN EXISTING DRAINAGE PIPE OR STRUCTURE
- 6 UTILITY TO BE RELOCATED BY OTHERS
- 7 REMOVE EXISTING CURB AND GUTTER
- 8 REMOVE/RELOCATE EXISTING SIGN
- 9 REMOVE/RELOCATE MAILBOXES AS DIRECTED BY ENGINEER. SEE SPECIAL PROVISIONS AND CHANNELIZATION PLAN
- 10 REMOVE EXISTING PAVEMENT MARKINGS
- 11 WATER METER TO BE REMOVED AND RESET BY OTHERS
- 12 PAVEMENT REMOVAL, INCLUDED IN ROADWAY EXCAVATION INCL. HAUL

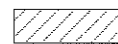
PROJECT LIMITS

PROJECT LIMITS

LEGEND



AREA OF PAVEMENT REMOVAL



AREA OF PLANING BITUMINOUS PAVEMENT

CLEARING LIMITS

PLAN CHECK	BY	DATE								Last Saved By: spwbxc Aug 22, 2013 - 2:43pm			
										REGION NO.	STATE	FED. AID PROJ. NO.	SURVEY NO.
										10	WASH.		4346
										DESIGNED BY: BAC		DRAWN BY: SJT	
										FIELD BOOK(S):		UPI# 12-0059-1	
			DATE	NO.	REVISION	BY							

PRELIMINARY

60 PERCENT SUBMITTAL

SNOHOMISH COUNTY
DEPARTMENT OF
PUBLIC WORKS

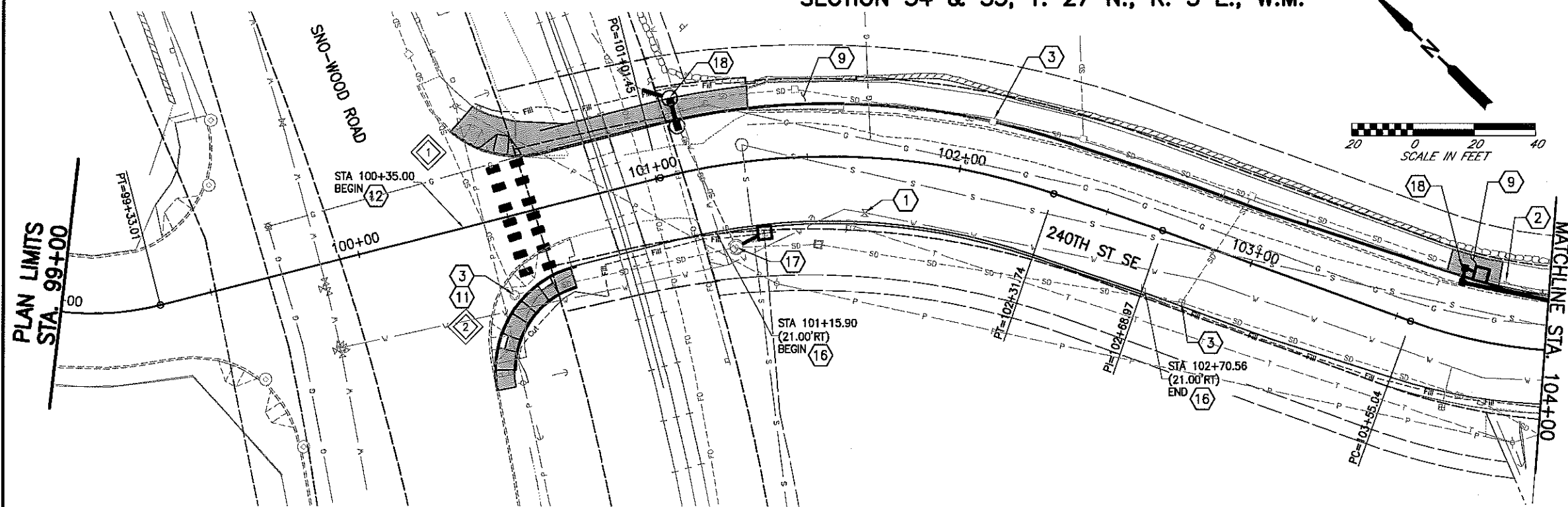
FUNDING NO. RR9322

WELLINGTON HILLS
240TH ST SE IMPROVEMENTS

ROAD PREPARATION PLAN

REFERENCE
SHEET NO.
RP04

SHEET
XX
OF
XX
SHEETS

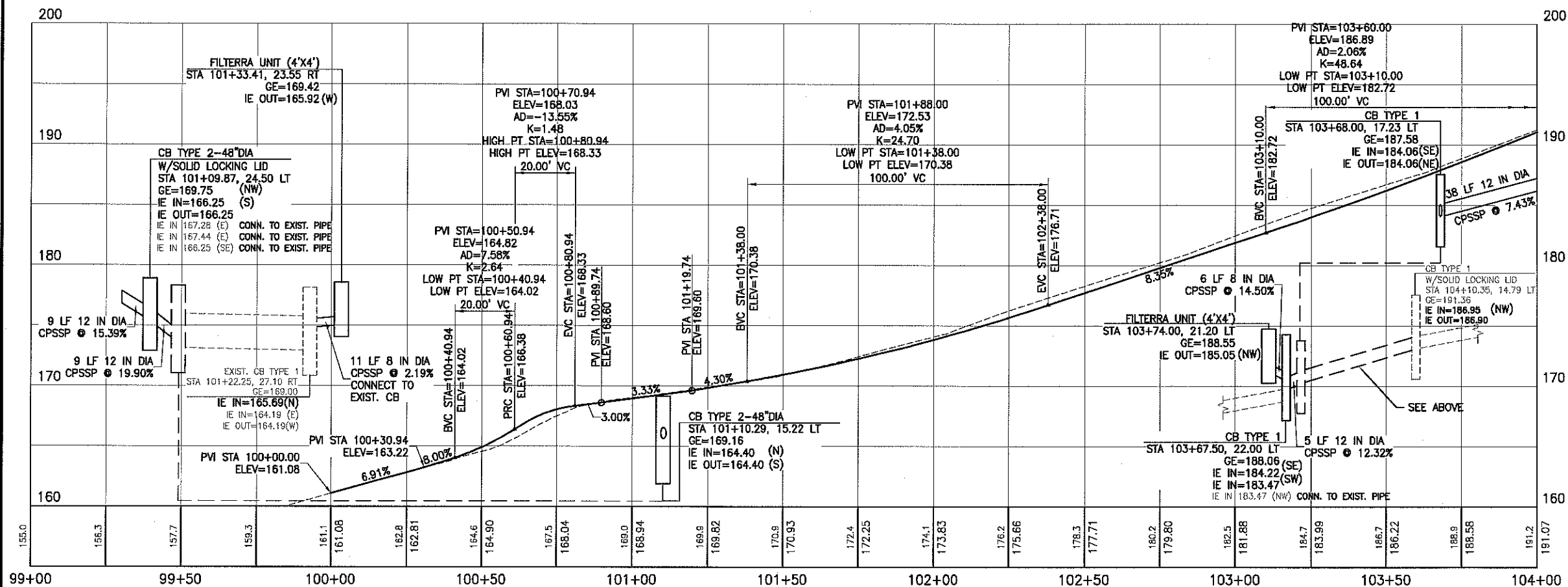


- NOTE:**
UTILITIES LOCATIONS ARE APPROXIMATE

NE CURB RETURN
ELEVATIONS 1

	<i>TOC</i>	
PC STA 1008+35.51 (31.3'LT)	163.89	Δ 86°56'05"
1/4	164.45	R 35.00'
1/2	164.91	T 33.18'
3/4	165.63	L 53.10'
PT STA 100+67.30 (17.0'LT)	166.97	

SE CURB RETURN ELEVATIONS		2
	TOC	
PC STA 100+32.60 (54.12'RT)	162.84	Δ 54°34'13"
1/4	163.27	R 35.00'
1/2	164.40	T 18.05'
3/4	165.76	L 33.34'
PT STA 100+67.50 (21.0'RT)	166.90	



PLAN CHECK	BY	DATE						Last Saved By: spwsjt Dec 05, 2013 - 9:58am
								REGION NO.
								STATE FED. AID PROJ. NO.
								SURVEY NO.
								WASH. 4346
								DESIGNED BY:
							BAC	DRAWN BY:
								SJT
								FIELD BOOK(S):
								UPI# 12-0059-1
			DATE	NO.	REVISION		BY	

60 PERCENT SUBMITTAL

SNOHOMISH COUNTY
DEPARTMENT OF
PUBLIC WORKS

FUNDING NO. RR9322

WELLINGTON HILLS
240TH ST SE IMPROVEMENTS

PLAN & PROFILE

REFERENCE
SHEET NO.
PL1

SHEET
XX
OF
XX
SHEETS

SECTION 34 & 35, T. 27 N., R. 5 E., W.M.

240TH ST SE

MATCHLINE STA. 104+00

PT=104+86.16

STA 105+00

STA 106+00

STA 107+00

STA 107+11.80
(25.28'LT)
BEGIN 9

A.P.
STA 107+26.52
(19.50'LT)

STA 108+00

STA 109+00

MATCHLINE STA. 109+10

TANK

T.C.E.

PROP. R/W

Cut

Fill

SD

G

V

P

S

3

17

18

7

8

5

6

BVCS=109+03.50
ELEV=266.21
16.77%

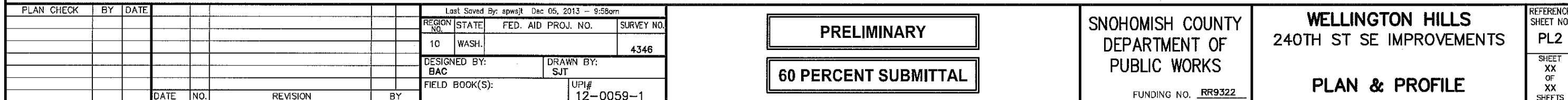
CONSTRUCTION NOTES:

- ① EXISTING UTILITY TO BE ADJUSTED TO FINAL GRADE BY OTHERS
- ② PLUG AND ABANDON EXISTING PIPE
- ③ ADJUST EXISTING CATCH BASIN TO FINAL GRADE
- ④ CONSTRUCT CEMENT CONCRETE TRAFFIC CURB AND GUTTER PER WSDOT ST PLAN F-10.12
- ⑤ CONSTRUCT DRIVEWAY APPROACH PER SHEET DS01

SCALE IN FEET

0 20 40

N

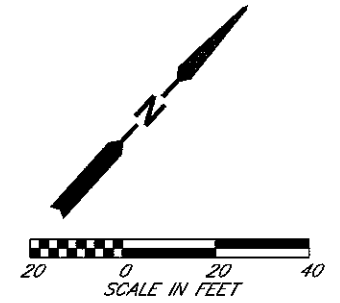
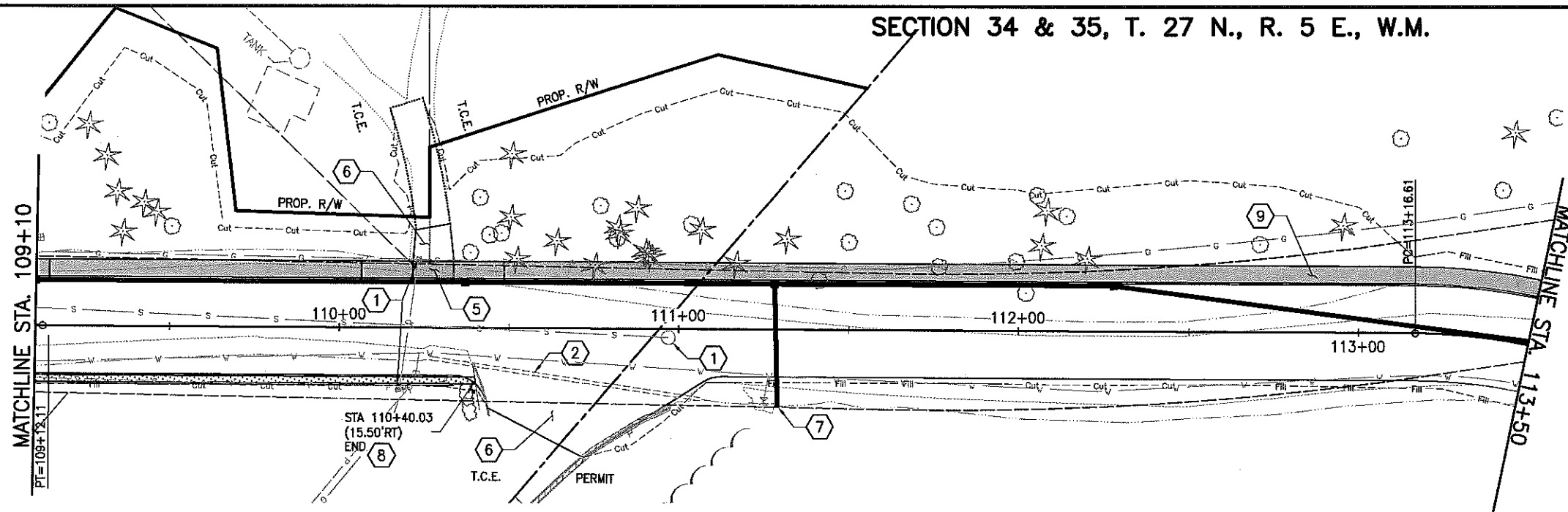


- NOTE:**
UTILITIES LOCATIONS ARE APPROXIMATE
- CALL 2 DAYS
BEFORE YOU DIG
811
(UNDERGROUND UTILITY LOCATIONS
ARE APPROXIMATE)

s:\IPW_Project_Data_Management\6-PROJECTS_UPI Year_2012\12-0059-112 CADD\2.1 production data\2.1 Drawings\Design\PSE12-0059 PL.dwg, PL2_12/5/2013 9:59:04 AM, spwslt, 1:2

S:\PW_Projects_Data_Management\PROJ\PROJECTS\UP1 Year_2012\12-0059-12 CAD\12.1 production data\2.1 Drawings\Design\12-0059_PL3.dwg, PL3, 12/25/2013 9:59:07 AM, spwsl, 1:2

SECTION 34 & 35, T. 27 N., R. 5 E., W.M.



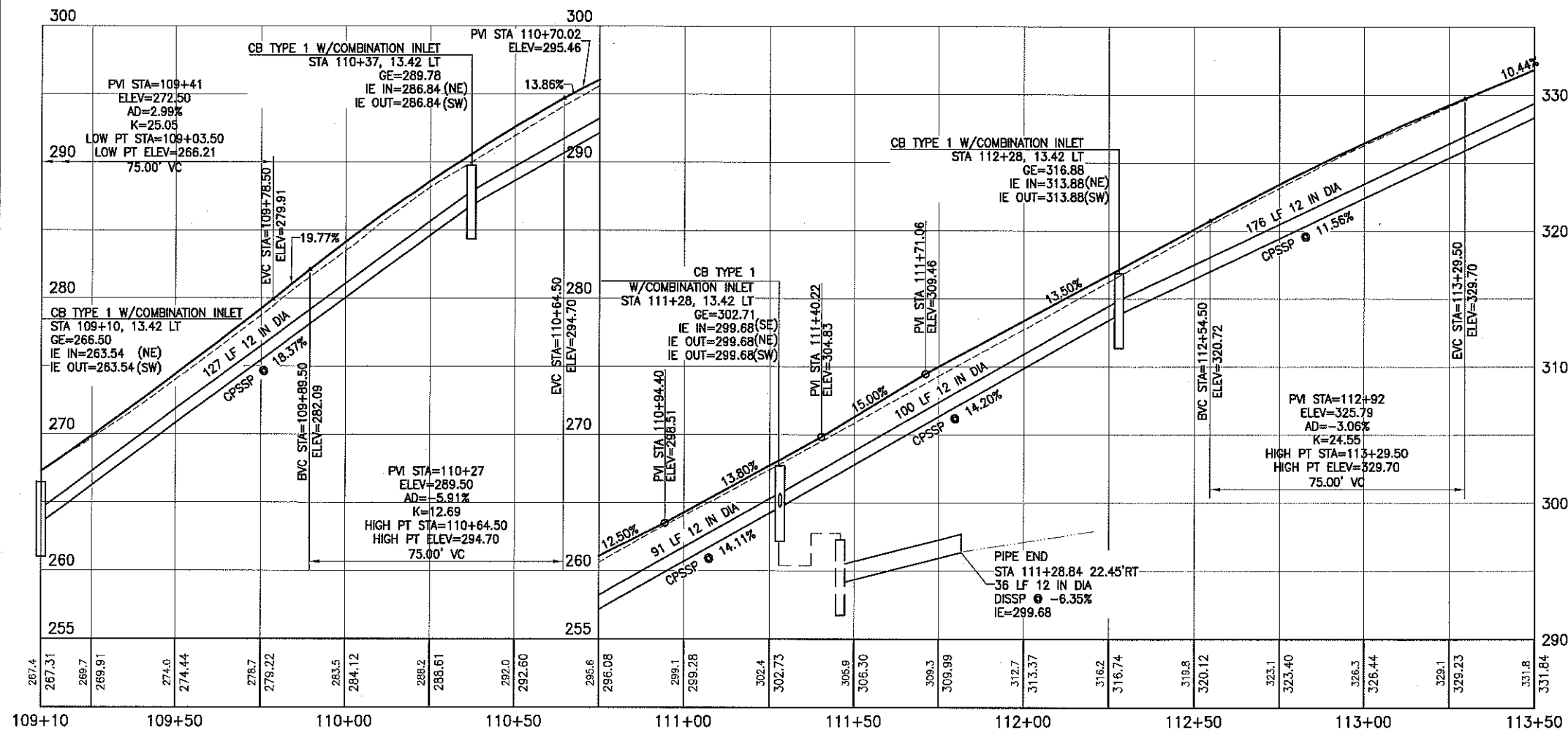
CONSTRUCTION NOTES:

- EXISTING UTILITY TO BE ADJUSTED TO FINAL GRADE BY OTHERS
- PLUG AND ABANDON EXISTING PIPE
- ADJUST EXISTING CATCH BASIN TO FINAL GRADE
- CONSTRUCT CEMENT CONCRETE TRAFFIC CURB AND GUTTER PER WSDOT ST PLAN F-10.12
- CONSTRUCT DRIVEWAY APPROACH PER SHEET DS01
- PAVE DRIVEWAY PER DRIVEWAY DETAILS SHEET DS01
- CONSTRUCT HAND PLACED RIP RAP
- CONSTRUCT FRENCH DRAIN PER DETAIL SHEET DD02
- CONSTRUCT CEMENT CONCRETE SIDEWALK PER SHEET TS01
- CONSTRUCT 2:1 CUT SLOPE
- CONSTRUCT SOLID LOCKING LID
- CONSTRUCT ROADWAY PER SHEET TS01
- CONSTRUCT WALKWAY PER DETAIL SHEET DT01
- CONSTRUCT SPEED HUMP PER DETAIL, SHEET DT01
- CONSTRUCT RAISED CROSSWALK PER DETAIL, SHEET DT01
- CONSTRUCT TYPE 3 EXTRUDED CURB PER WSDOT STD. PLAN F-10.42
- CONNECT TO EXISTING DRAINAGE STRUCTURE
- CONNECT TO EXISTING PIPE

NOTE:

UTILITIES LOCATIONS ARE APPROXIMATE

CALL 2 DAYS BEFORE YOU DIG
811
(UNDERGROUND UTILITY LOCATIONS ARE APPROXIMATE)



PLAN CHECK		BY	DATE	Last Saved By: spwsjt Dec 05, 2013 - 9:58am	
				REGION NO.	STATE
				10	WASH.
				FED. AID PROJ. NO.	SURVEY NO.
					4346
				DESIGNED BY:	DRAWN BY:
				BAC	SJT
				FIELD BOOK(S):	UPI#
					12-0059-1
DATE	NO.	REVISION	BY		

PRELIMINARY

60 PERCENT SUBMITTAL

SNOHOMISH COUNTY
DEPARTMENT OF
PUBLIC WORKS

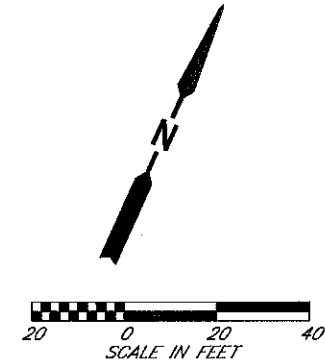
FUNDING NO. RR9322

WELLINGTON HILLS
240TH ST SE IMPROVEMENTS

PLAN & PROFILE

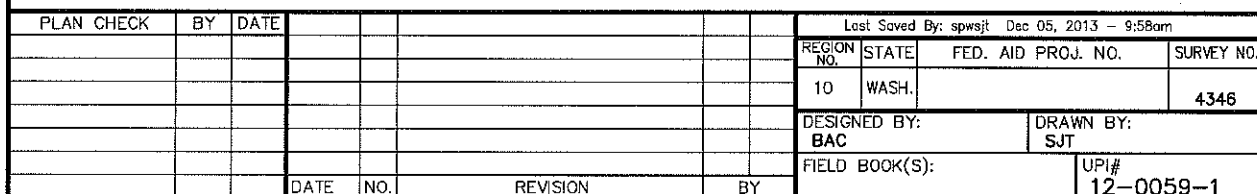
REFERENCE
SHEET NO.
PL3
SHEET
XX
OF
XX
SHEETS

S:\PW_Project_Data_Management\6-PROJECTS\UPI Year_2012\12-0059-1\2 CADD\2.1 production data\2.1 Drawings\Design\PSE12-0059 PL.dwg, PL4 12/5/2013 9:59:09 AM, \$psw\$12-12



- 1 EXISTING UTILITY TO BE ADJUSTED TO FINAL GRADE BY OTHERS
- 2 PLUG AND ABANDON EXISTING PIPE
- 3 ADJUST EXISTING CATCH BASIN TO FINAL GRADE
- 4 CONSTRUCT CEMENT CONCRETE TRAFFIC CURB AND GUTTER PER WSDOT ST PLAN F-10.12
- 5 CONSTRUCT DRIVEWAY APPROACH PER SHEET DS01
- 6 PAVE DRIVEWAY PER DRIVEWAY DETAILS SHEET DS01
- 7 CONSTRUCT HAND PLACED RIP RAP
- 8 CONSTRUCT FRENCH DRAIN PER DETAIL SHEET DD02
- 9 CONSTRUCT CEMENT CONCRETE SIDEWALK PER SHEET TS01
- 10 CONSTRUCT 2:1 CUT SLOPE
- 11 CONSTRUCT SOLID LOCKING LID
- 12 CONSTRUCT ROADWAY PER SHEET TS01
- 13 CONSTRUCT WALKWAY PER DETAIL SHEET DT01
- 14 CONSTRUCT SPEED HUMP PER DETAIL SHEET DT01
- 15 CONSTRUCT RAISED CROSSWALK PER DETAIL SHEET DT01
- 16 CONSTRUCT TYPE 3 EXTRUDED CURB PER WSDOT STD. PLAN F-10.42
- 17 CONNECT TO EXISTING DRAINAGE STRUCTURE
- 18 CONNECT TO EXISTING PIPE

CALL 2 DAYS
BEFORE YOU DIG
811
(UNDERGROUND UTILITY LOCATIONS
ARE APPROXIMATE)



60 PERCENT SUBMITTAL

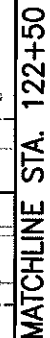
FUNDING NO. RR9322

PLAN & PROFILE

REFERENCE
SHEET NO.
PL4

SHEET
XX
OF
XX
SHEETS

MATCHLINE STA. 117+5



- NOTE:**
UTILITIES LOCATIONS ARE APPROXIMATE

Profile view graph showing elevation (360 to 400) vs stationing (117+75 to 122+50). The graph displays a vertical curve with a 11.74% initial grade, a 3.95% final grade, and a high point at STA=119+05.50. Key points include BVC at STA=117+80.50, ELEV=373.28, and PVI at STA=118+43, ELEV=380.61. The curve length is 125.00'.

Station	Elevation
117+75	372.63
118+00	375.45
118+25	377.68
118+50	379.93
118+75	381.59
119+00	382.86
119+25	383.6
119+50	384.4
120+00	385.0
120+25	385.4
120+50	385.6
121+00	385.8
121+25	385.8
121+50	385.9
122+00	385.9
122+25	386.4
122+50	386.9

PLAN	CHECK	BY	DATE								Last Saved By: spwsjtl Dec 05, 2013 — 9:58am			
											REGION NO.	STATE	FED. AID PROJ. NO.	SURVEY NO.
											10	WASH.		4346
											DESIGNED BY: BAC			DRAWN BY: SJT
											FIELD BOOK(S):			UPI# 12-0059-1
				DATE	NO.	REVISION				BY				

PRELIMINARY

60 PERCENT SUBMITTAL

SNOHOMISH COUNTY
DEPARTMENT OF
PUBLIC WORKS
FUNDING NO. RR9322

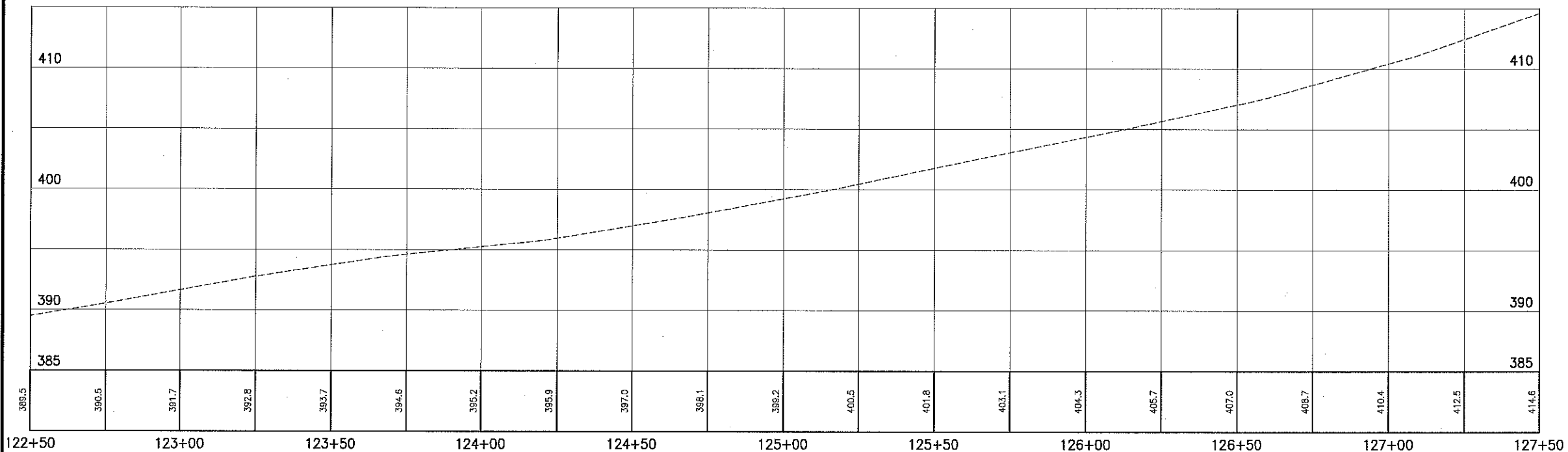
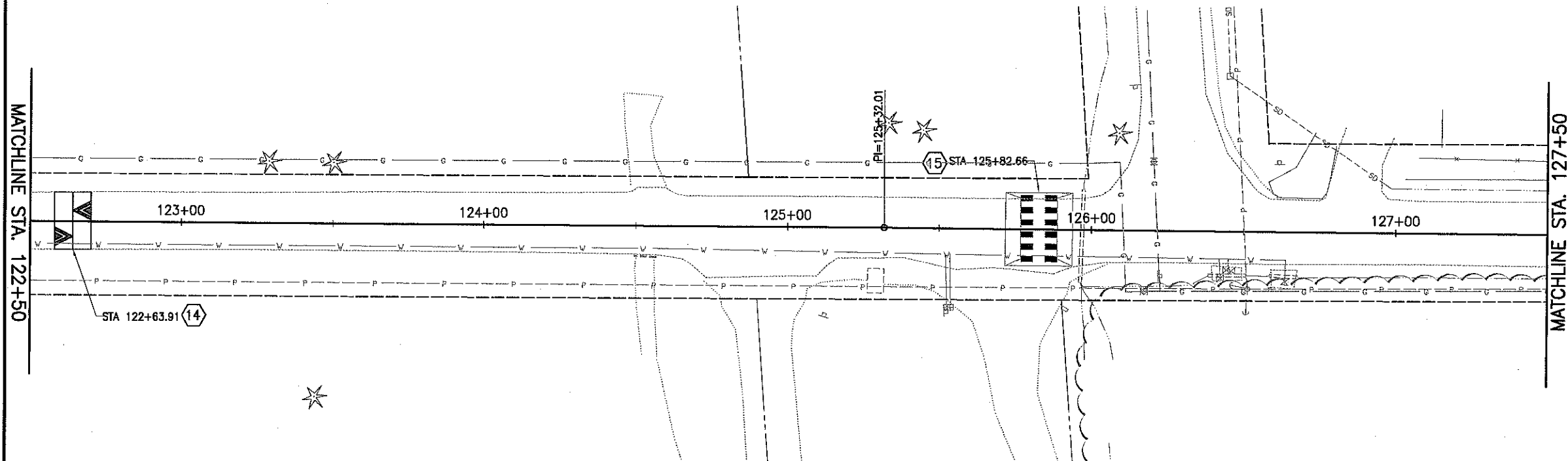
WELLINGTON HILLS
240TH ST SE IMPROVEMENTS

PLAN & PROFILE

REFERENCE
SHEET NO.
PL5

SHEET
XX
OF
XX
SHEETS

MAICHLINE SIA. 722+50



PLAN CHECK	BY	DATE								Last Saved By: spwsjt Dec 05, 2013 - 9:58am			
										REGION NO.	STATE	FED. AID PROJ. NO.	SURVEY NO.
										10	WASH.		4346
										DESIGNED BY: BAC		DRAWN BY: SJT	
										FIELD BOOK(S):		UPI# 12-0059-1	
			DATE	NO.	REVISION				BY				

60 PERCENT SUBMITTAL

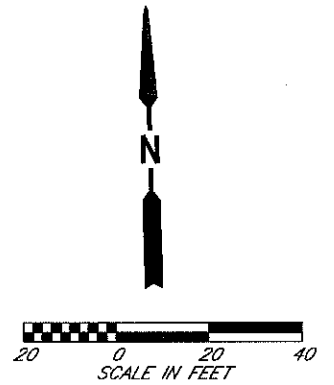
FUNDING NO. RR9322

SHEET
XX
OF
XX
SHEETS

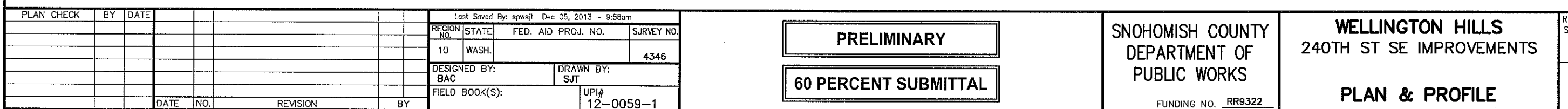
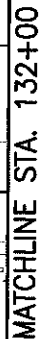
- 1 EXISTING UTILITY TO BE ADJUSTED TO FINAL GRADE BY OTHERS
- 2 PLUG AND ABANDON EXISTING PIPE
- 3 ADJUST EXISTING CATCH BASIN TO FINAL GRADE
- 4 CONSTRUCT CEMENT CONCRETE TRAFFIC CURB AND GUTTER PER WSDOT ST PLAN F-10.12
- 5 CONSTRUCT DRIVEWAY APPROACH PER SHEET DS01
- 6 PAVE DRIVEWAY PER DRIVEWAY DETAILS SHEET DS01
- 7 CONSTRUCT HAND PLACED RIP RAP
- 8 CONSTRUCT FRENCH DRAIN PER DETAIL SHEET DD02
- 9 CONSTRUCT CEMENT CONCRETE SIDEWALK PER SHEET TS01
- 10 CONSTRUCT 2:1 CUT SLOPE
- 11 CONSTRUCT SOLID LOCKING LID
- 12 CONSTRUCT ROADWAY PER SHEET TS01
- 13 CONSTRUCT WALKWAY PER DETAIL SHEET DT01
- 14 CONSTRUCT SPEED HUMP PER DETAIL SHEET DT01
- 15 CONSTRUCT RAISED CROSSWALK PER DETAIL SHEET DT01
- 16 CONSTRUCT TYPE 3 EXTRUDED CURB PER WSDOT STD. PLAN F-10.42
- 17 CONNECT TO EXISTING DRAINAGE STRUCTURE
- 18 CONNECT TO EXISTING PIPE

NOTE:
UTILITIES LOCATIONS ARE APPROXIMATE

CALL 2 DAYS
BEFORE YOU DIG
811
(UNDERGROUND UTILITY LOCATIONS
ARE APPROXIMATE)



MATCHLINE STA. 127+50



S:\PW_Project_Data_Management\6-PROJECTS\UPI Year__2012\12-0059-1\2 CAD\12.1 production data\2.1 Drawings\Design\PS\12-0059_PL.dwg, Pl.7, 12/5/2013 9:59:17 AM, spwslt, 12

REFERENCE
SHEET NO.
PL7

SHEET
XX
OF
XX
SHEETS

REFERENCE SHEET NO.	PL8
SHEET XX OF XX SHEETS	

S:\PW_Project_Data_Management\6-PROJECTS\UPI Year_2012\12-0059-1\2 CADD\2.1 production data\2.1 SU.dwg, SU01, 8/22/2013 2:58:42 PM, spwbxc, 1-2



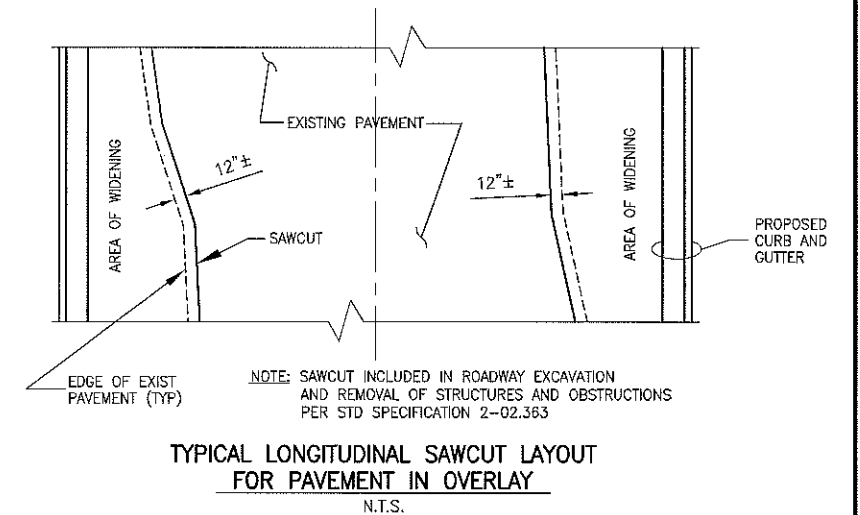
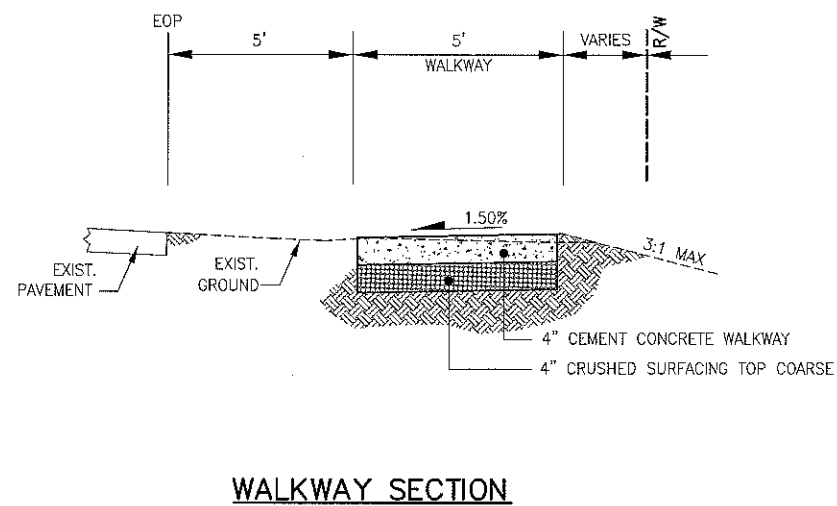
PLAN CHECK	BY	DATE								Last Saved By: spwsjl Aug 15, 2013 - 4:42pm			
										REGION NO.	STATE	FED. AID PROJ. NO.	SURVEY NO.
										10	WASH.		4346
										DESIGNED BY: BAC		DRAWN BY: SJT	
										FIELD BOOK(S):		UPI# 12-0059-1	
			DATE	NO.	REVISION				BY				

60 PERCENT SUBMITTAL

FUNDING NO. RR9322

REFERENCE
SHEET NO.
SU01

SHEET
XX
OF
XX
SHEETS



PLAN CHECK	BY	DATE								Last Saved By: spwsjt Aug 27, 2013 - 10:35am			
										REGION NO.	STATE	FED. AID PROJ. NO.	SURVEY NO.
										10	WASH.		4346
										DESIGNED BY: BAC		DRAWN BY: SJT	
			DATE	NO.	REVISION				BY	FIELD BOOK(S):			UPI# 12-0059-1

PRELIMINARY

60 PERCENT SUBMITTAL

SNOHOMISH COUNTY
DEPARTMENT OF
PUBLIC WORKS

FUNDING NO. RR9322

WELLINGTON HILLS
240TH ST SE IMPROVEMENTS

MISCELLANEOUS DETAILS

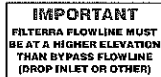
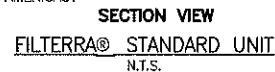
REFERENCE
SHEET NO.
DT01

SHEET
XX
OF
XX
SHEETS

S:\PW_Project_Data_Management\6-PROJECTS\UPI Year_2012\12-0059-1\2 CADD\2.1 production data\2.1 Drawings\Design\PS\12-0059_DD.dwg, 12/17/2013 8:06:41 AM, PDF reDirect v2



* SEE SHEET PL01 FOR FILTERRA UNIT ORIENTATION, RIM ELEVATIONS AND INVERT ELEVATIONS.



SECTION VIEW
STANDARD FILTERRA THROAT OPENING
N.T.S.

- NOTES:
1. THE UNIT SHALL BE PLACED ON A COMPACTED SUB-GRADE WITH A MINIMUM 6-INCH GRAVEL BASE MATCHING THE FINAL GRADE OF THE CURB LINE IN THE AREA OF THE UNIT. THE UNIT IS TO BE PLACED SUCH THAT THE UNIT AND TOP SLAB MATCH THE GRADE OF THE CURB IN THE AREA OF THE UNIT. COMPACT UNDISTURBED SUB-GRADE MATERIALS TO 95% OF MAXIMUM DENSITY AT +1-2% OF OPTIMUM MOISTURE. UNSUITABLE MATERIAL BELOW SUB-GRADE SHALL BE REPLACED TO THE SITE ENGINEER'S APPROVAL.
2. OUTLET CONNECTIONS SHALL BE ALIGNED AND SEALED TO MEET THE APPROVED DRAWINGS WITH MODIFICATIONS NECESSARY TO MEET SITE CONDITIONS AND LOCAL REGULATIONS.
3. ONCE THE UNIT IS SET, THE INTERNAL WOODEN FORMS AND PROTECTIVE MESH COVER MUST BE LEFT INTACT. REMOVE ONLY THE TEMPORARY WOODEN SHIPPING BLOCKS BETWEEN THE BOX AND TOP SLAB. THE TOP SLAB SHOULD BE SEALED ONTO THE BOX SECTION BEFORE BACKFILLING. NON-SINKING GROUT OR SAND FILL OR SIMILAR WATERPROOF SEAL. THE BOARDS ON TOP OF THE LID AND BOARDS SEALED IN THE UNIT'S THROAT MUST NOT BE REMOVED. THE SUPPLIER (AMERICAST OR ITS AUTHORIZED DEALER) WILL REMOVE THESE SECTIONS AT THE TIME OF ACTIVATION. BACKFILLING SHOULD BE PERFORMED IN A CAREFUL MANNER, BRINGING THE APPROPRIATE FILL MATERIAL UP IN 6" LIFTS ON ALL SIDES. PRECAST SECTIONS SHALL BE SET IN A MANNER THAT WILL RESULT IN A WATERTIGHT JOINT. IN ALL INSTANCES, INSTALLATION OF FILTERRA® UNIT SHALL CONFORM TO ASTM SPECIFICATION C691 "STANDARD PRACTICE FOR INSTALLATION OF UNDERGROUND PRECAST UTILITY STRUCTURES", UNLESS DIRECTED OTHERWISE IN CONTRACT DOCUMENTS.
4. THE CONTRACTOR IS RESPONSIBLE FOR INLET PROTECTION/SEDIMENT CONTROL AND CLEANING AROUND EACH FILTERRA UNIT.

PRELIMINARY

60 PERCENT SUBMITTAL

SNOHOMISH COUNTY
DEPARTMENT OF
PUBLIC WORKS

FUNDING NO. RR9322

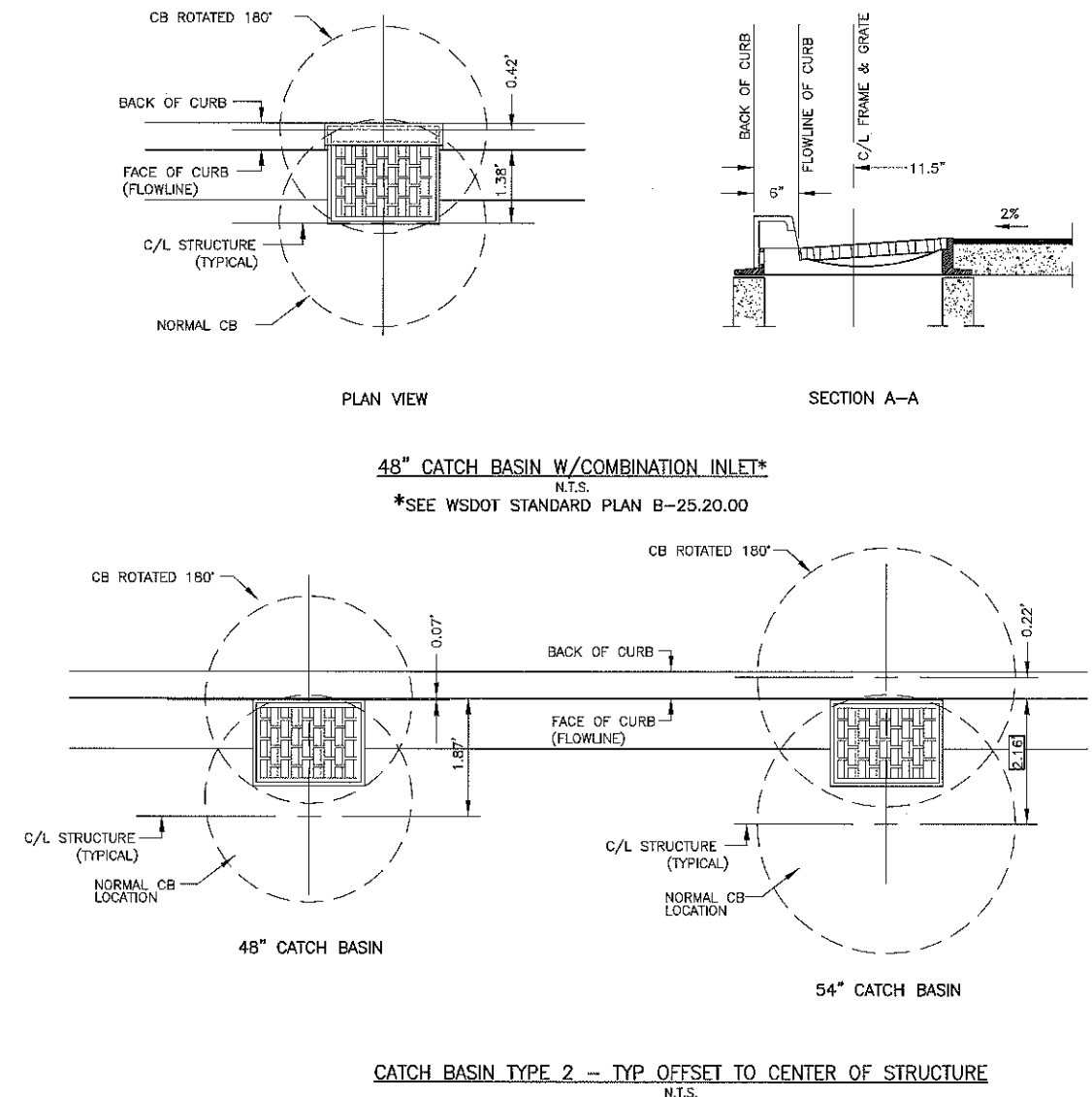
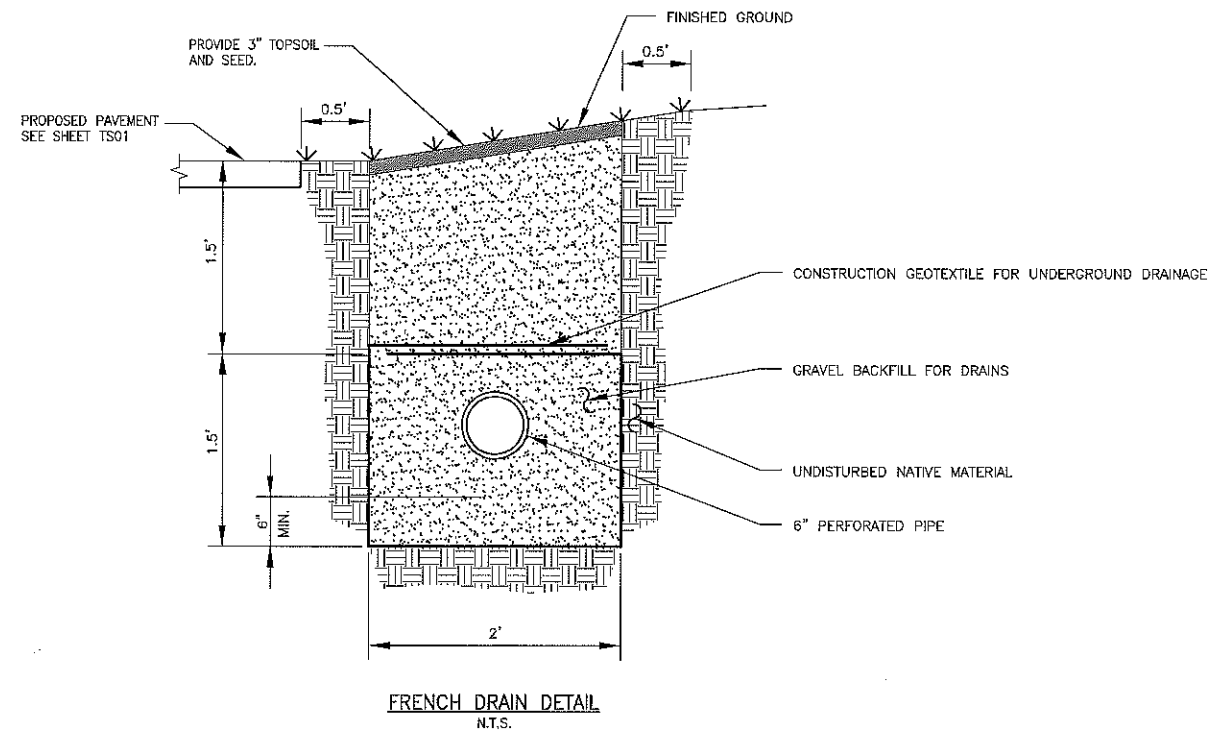
WELLINGTON HILLS
240TH ST SE IMPROVEMENTS

DRAINAGE DETAILS

REFERENCE
SHEET NO.
DD01

SHEET
XX
OF
XX
SHEETS

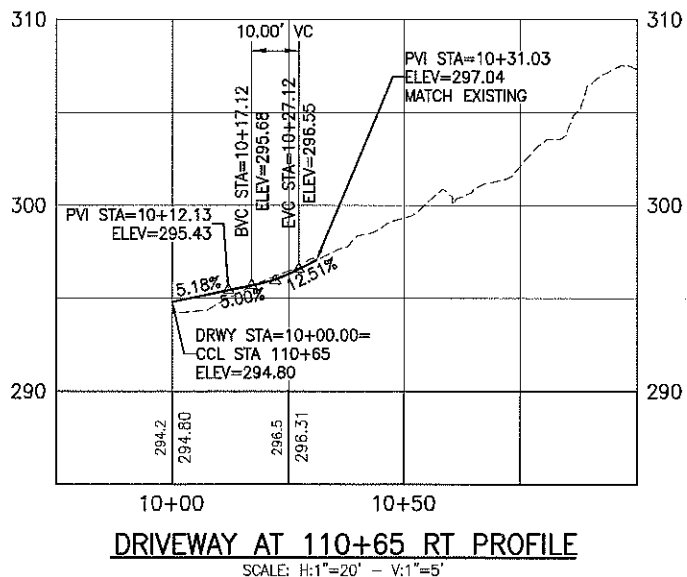
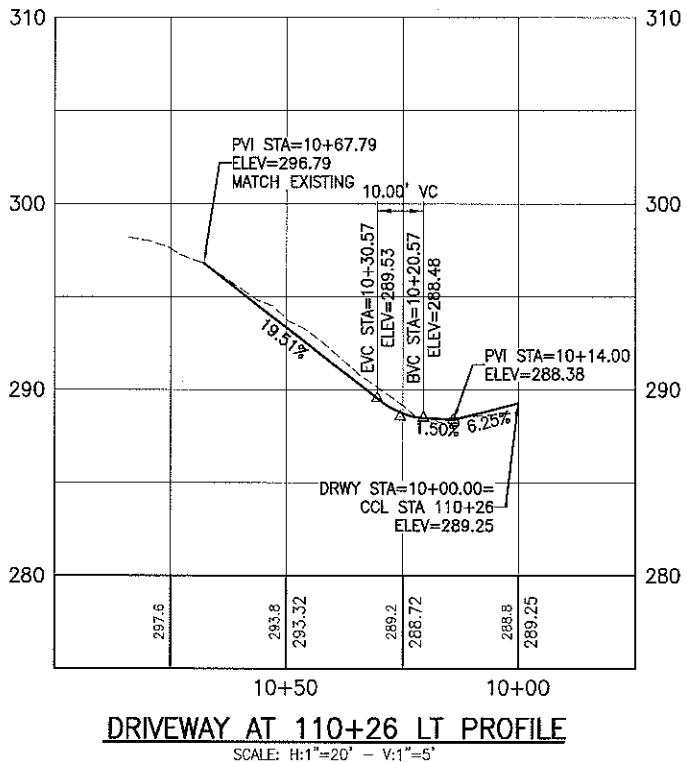
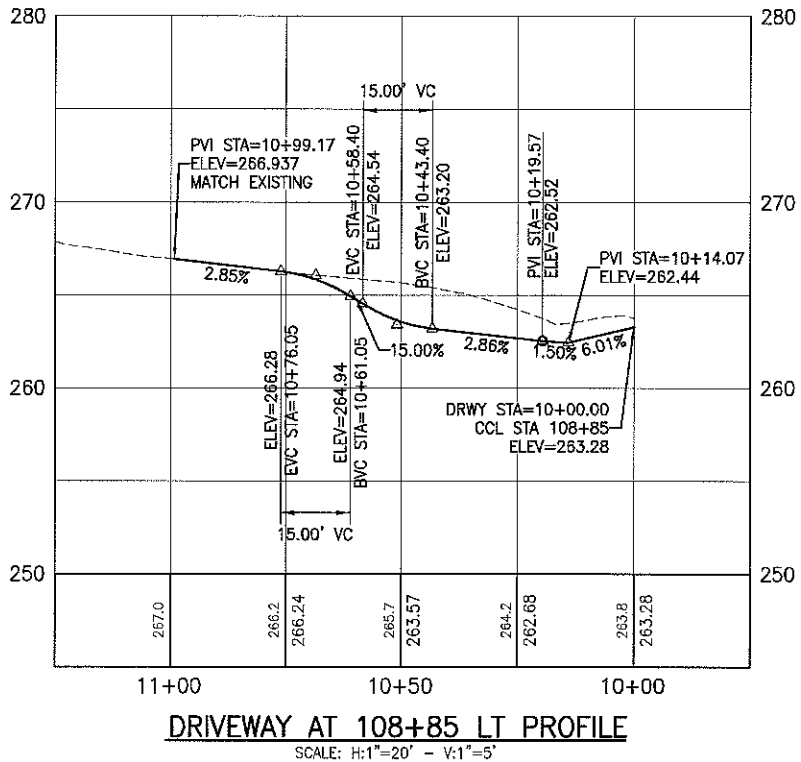
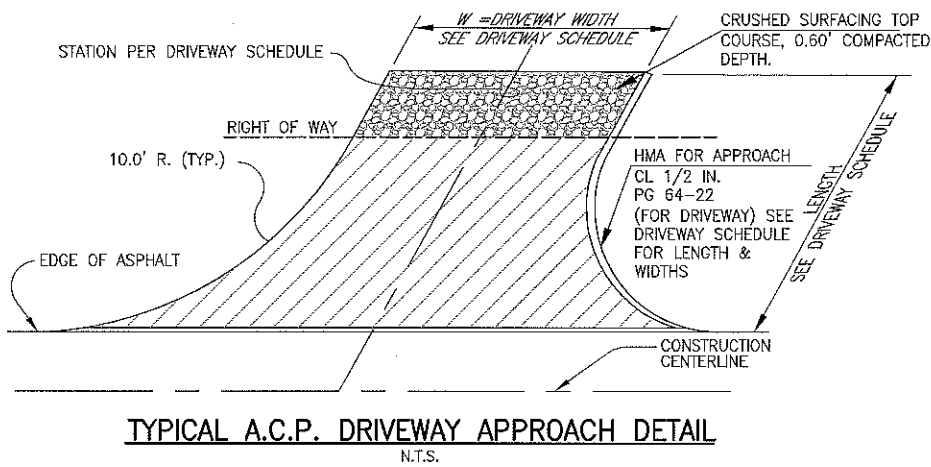
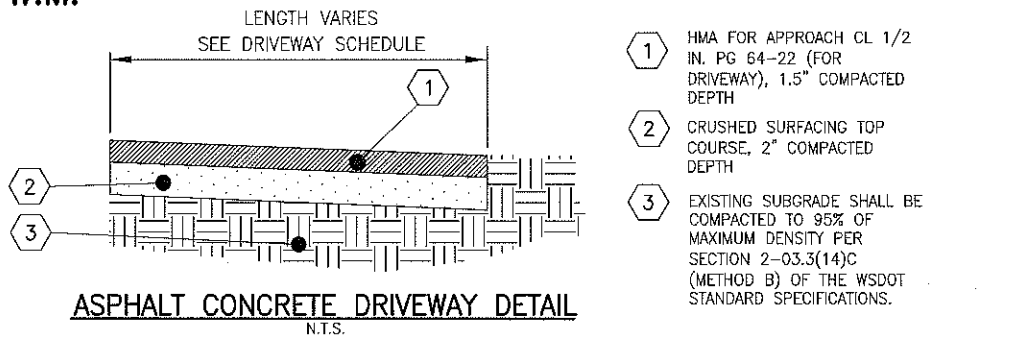
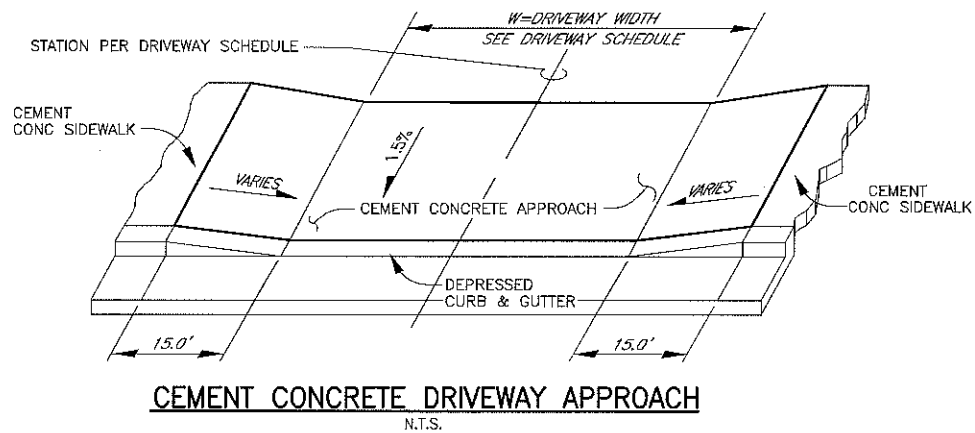
S:\PW_Project_Data_Management\6-PROJECTS\Upt Year_2012\12-0059-1\2 CADD\2.1 production data\2.1 Drawings\Design\PS\12-0059_DD.dwg, 12/17/2013 8:07:33 AM, PDF reDirect v2



PLAN CHECK		BY	DATE							Last Saved By: spwsjt Aug 27, 2013 -- 3:44pm				<div>PRELIMINARY</div> <div>60 PERCENT SUBMITTAL</div>		SNOHOMISH COUNTY DEPARTMENT OF PUBLIC WORKS FUNDING NO. <u>RR9322</u>		WELLINGTON HILLS 240TH ST SE IMPROVEMENTS DRAINAGE DETAILS		REFERENCE SHEET NO. DD02 SHEET XX OF XX SHEETS	
										REGION NO.	STATE	FED. AID PROJ. NO.	SURVEY NO.								
										10	WASH.		4346								
												DESIGNED BY: BAC		DRAWN BY: SJT							
												FIELD BOOK(S):		UPI# 12-0059-1							
				DATE	NO.	REVISION					BY										

SECTION 34 & 35, T. 27 N., R. 5 E., W.M.

DRIVEWAY SCHEDULE						
℄ STATION LEFT OR RIGHT	WIDTH (FT.)	LENGTH FROM E.O.P.	MATERIAL TYPE	SLOPE 1/ DISTANCE 1	SLOPE 2/ DISTANCE 2	SLOPE 3/ DISTANCE 3
SPRINGHETTI RD						
108+85 LT	20.0'	80.0'	ASPHALT	1.50%/5.0'	2.86%/24.0'	2.85%/23.0'
110+26 LT	12.0'	53.0'	ASPHALT TO R/W	1.50%/5.0'	19.51%/37.0'	—
110+65 RT	30.0'	19.0'	ASPHALT	5.00%/5.0'	12.51%/4.0'	—
115+08 RT	20.0'	10.0'	ASPHALT	EXISTING	—	—
118+11 RT	15.0'	15.0'	ASPHALT	EXISTING	—	—

[illegible]

PRELIMINARY

60 PERCENT SUBMITTAL

SNOHOMISH COUNTY
DEPARTMENT OF
PUBLIC WORKS

FUNDING NO. DRIVEWAY
RR9322

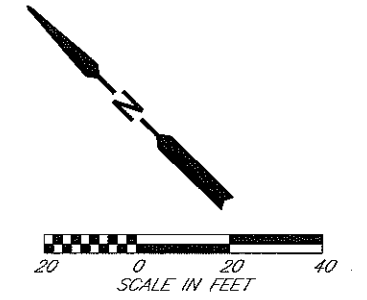
WELLINGTON HILLS
240TH ST SE IMPROVEMENTS

DRIVEWAY SCHEDULE

REFERENCE
SHEET NO.
DS01

SHEET
XX
OF
XX
SHEETS

S:\PW_Project_Data_Management\6-PROJECTS\UPI Year_2012\12-0059-1\2 CADD\2.1 production data\2.1 Drawings\Design\PSE\12-0059_1.5.dwg, 12/17/2013 8:14:05 AM, PDF reDirect v2



	HYDROSEED PER SEED MIX AS LISTED IN SPECIAL PROVISIONS
---	--

PRELIMINARY

60 PERCENT SUBMITTAL

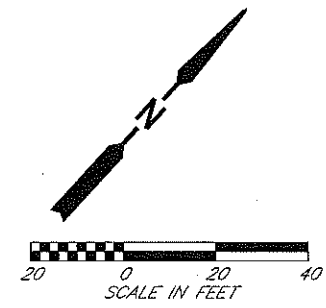
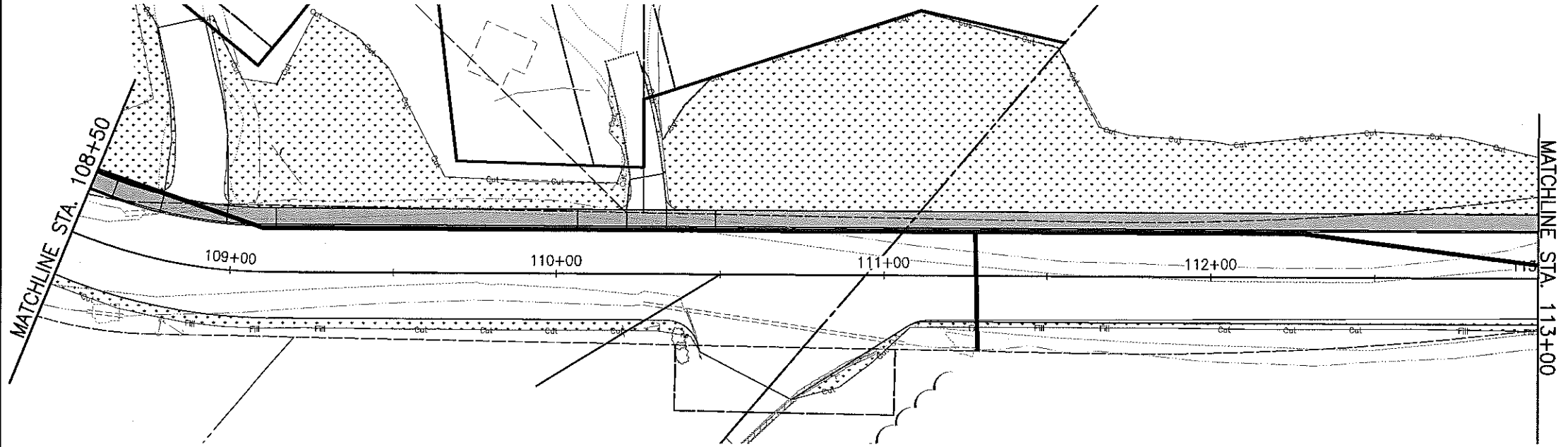
FUNDING NO. RR9322

LANDSCAPING PLAN

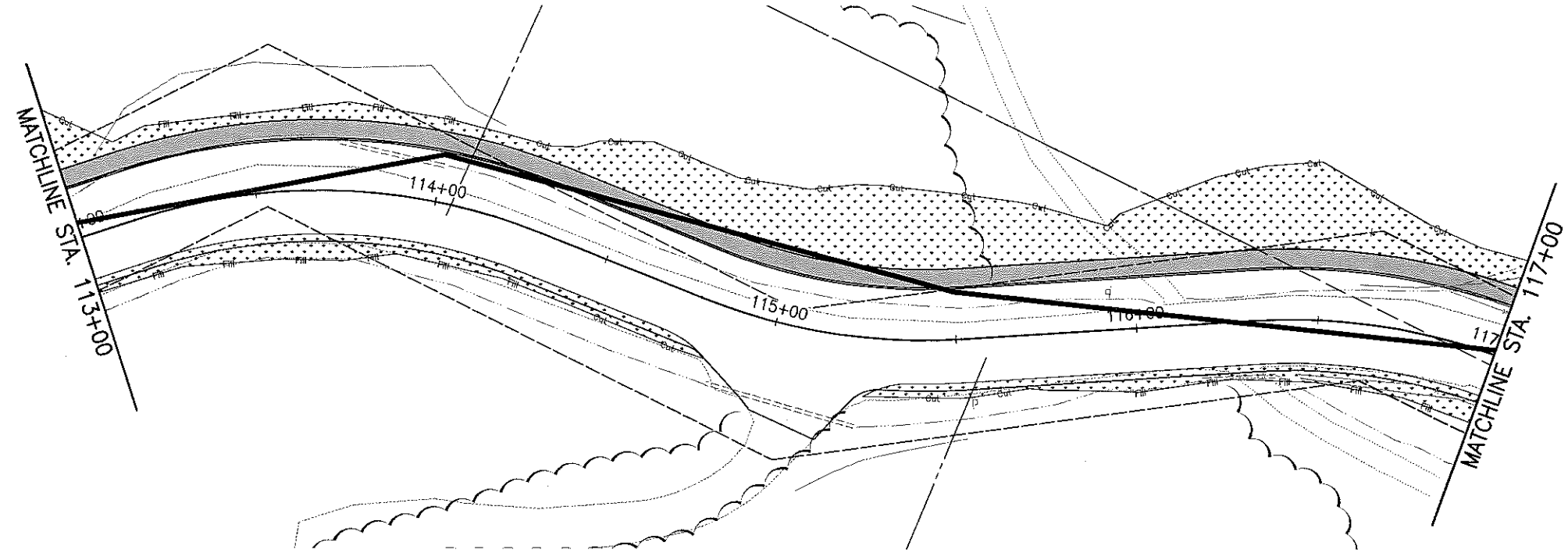
REFERENCE
SHEET NO.
LS01

SHEET
XX
OF
XX
SHEETS

SECTION 34 & 35, T. 27 N., R. 5 E., W.M.



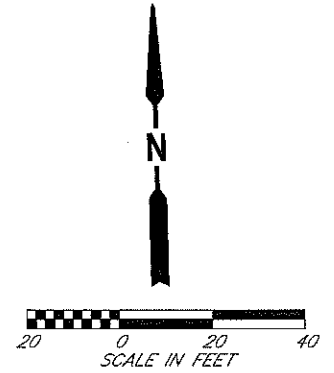
LANDSCAPING LEGEND:



S:\PW_Project_Data_Management\6-PROJECTS\UPI Year_2012\12-0059-112 CADD\2.1 production data\2.1 Drawings\Design\PS\12-0059_15.dwg, 12/17/2013 8:14:47 AM, PDF reDirect v2

PLAN CHECK			BY	DATE				Last Saved By: spwsjt Aug 27, 2013 - 10:25am			<div>PRELIMINARY</div> <div>60 PERCENT SUBMITTAL</div>		SNOHOMISH COUNTY DEPARTMENT OF PUBLIC WORKS FUNDING NO. RR9322		WELLINGTON HILLS 240TH ST SE IMPROVEMENTS LANDSCAPING PLAN		REFERENCE SHEET NO. LS02 SHEET XX OF XX SHEETS	
REGION NO.		STATE		FED. AID PROJ. NO.		SURVEY NO.												
10		WASH.				4346												
DESIGNED BY: BAC		DRAWN BY: SJT		FIELD BOOK(S):		UPI# 12-0059-1												
DATE	NO.	REVISION			BY													

S:\PW_Project_Data_Management\6-PROJECTS\UPI Year_2012\12-0059-1\2 CADD\2.1 production data\2.1 Drawings\Design\PS\12-0059 LS.dwg, 12/17/2013 8:15:08 AM, PDF reDirect v2



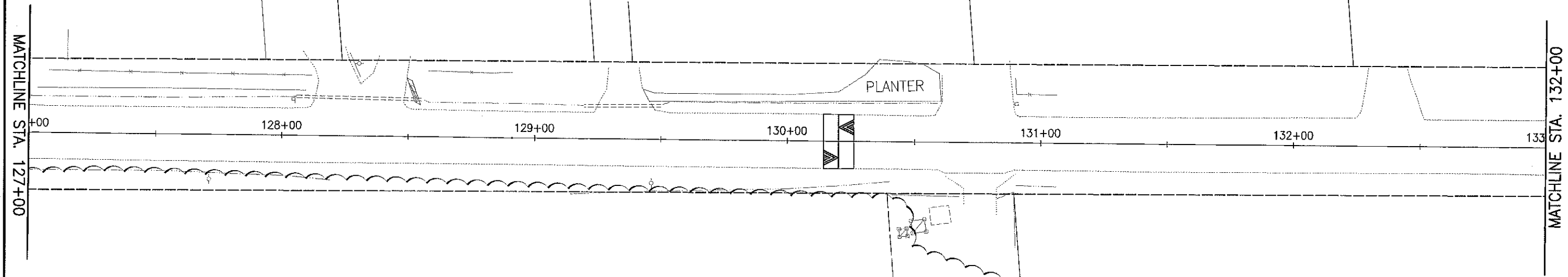
	HYDROSEED PER SEED MIX AS LISTED IN SPECIAL PROVISIONS
---	--

PRELIMINARY
60 PERCENT SUBMITTAL

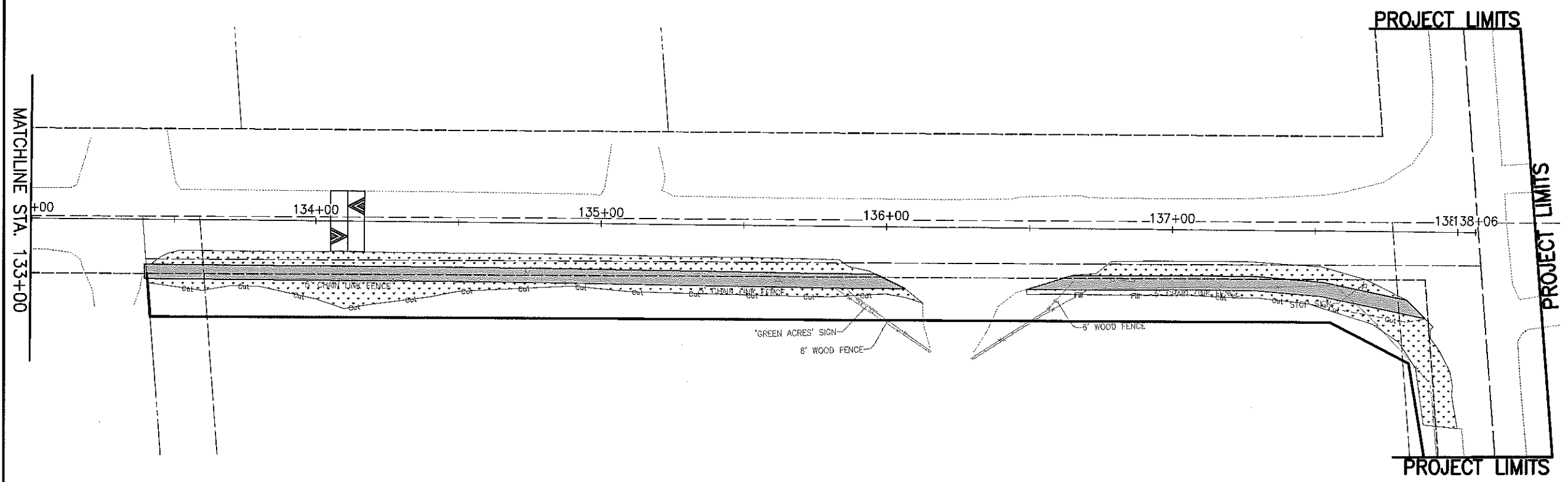
FUNDING NO. RR9322

REFERENCE
SHEET NO.
LS03

SHEET
XX
OF
XX
SHEETS

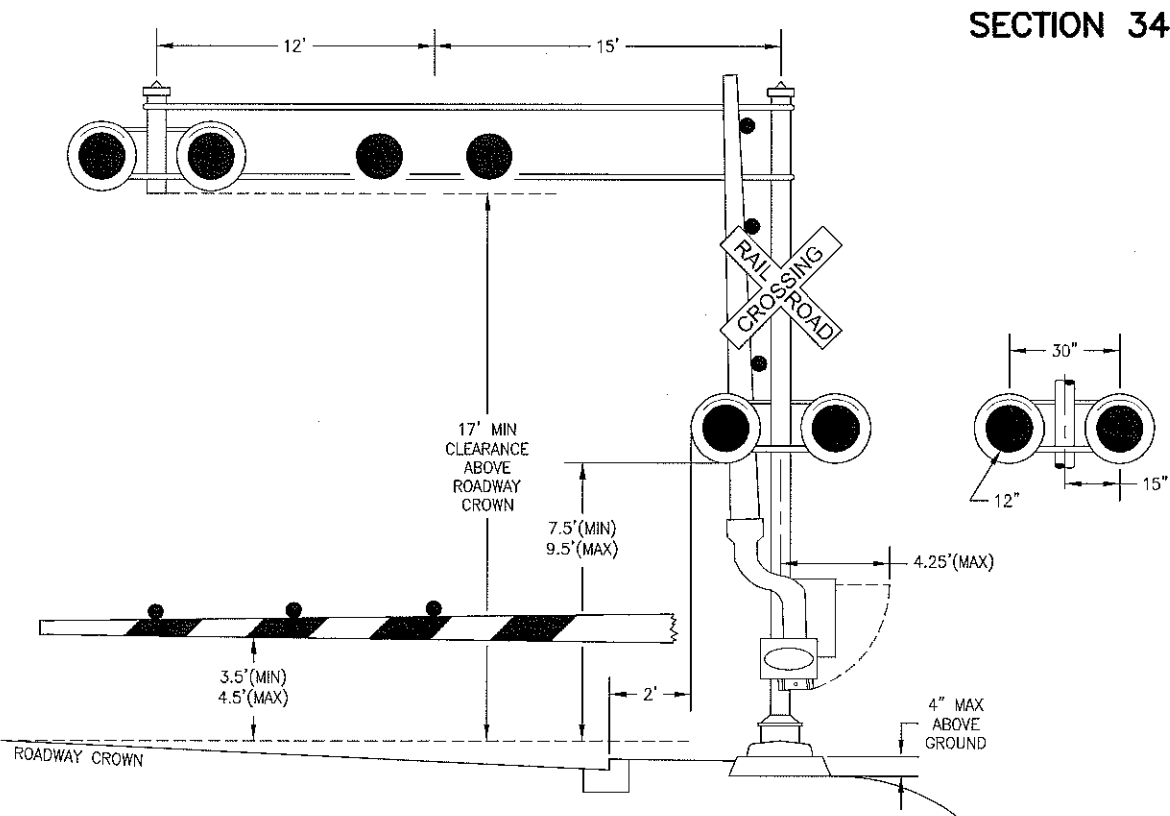


	HYDROSEED PER SEED MIX AS LISTED IN SPECIAL PROVISIONS
---	--



PLAN CHECK	BY	DATE				Last Saved By: spwsjt Aug 27, 2013 - 10:25am				<div>PRELIMINARY</div> <div>60 PERCENT SUBMITTAL</div>		SNOHOMISH COUNTY DEPARTMENT OF PUBLIC WORKS FUNDING NO. <u>RR9322</u>	WELLINGTON HILLS 240TH ST SE IMPROVEMENTS LANDSCAPING PLAN	REFERENCE SHEET NO. LS04 SHEET XX OF XX SHEETS
						REGION NO.	STATE	FED. AID PROJ. NO.	SURVEY NO.					
						10	WASH.		4346					
						DESIGNED BY: BAC		DRAWN BY: SJT						
						FIELD BOOK(S):		UPI# 12-0059-1						
			DATE	NO.	REVISION	BY								

S:\PW_Project_Data_Management\6-PROJECTS_UPI_Year_2012\12-0059-1\2 CADD\2.1 production data\2.1 Drawings\Design\PS\12-0059_PSIG.dwg, SP2, 8/27/2013 4:56:14 PM, spwsjt, 1:2



RR CROSSING GATE AND CANTILEVER DETAIL
N.T.S.

SECTION 34 & 35, T. 27 N., R. 5 E., W.M.

OUTPUT FILE

FT-1		
ø4R	101	641
ø4Y	102	642
ø4G	103	643
ø4DW	104	741
EV1B	105	584
ø4W	106	742
ø8R	107	681
ø8Y	108	682
ø8G	109	683
ø8DW	110	781
EV1D	111	504
ø8W	112	782

FT-2		
ø2DW	113	721
EV1A	114	5A4
ø2W	115	722
ø3R	116	631
ø3Y	117	632
ø3G	118	633
ø6DW	119	761
EV1C	120	5C4
ø6W	121	762
ø7R	122	671
ø7Y	123	672
ø7G	124	673

FT-3		
ø1R	125	611
ø1Y	126	612
ø1G	127	613
ø2R	128	621
ø2Y	129	622
ø2G	130	623
ø5R	131	651
ø5Y	132	652
ø5G	133	653
ø6R	134	661
ø6Y	135	662
ø6G	136	663

EXISTING SIGNAL HEADS NOT SHOWN

PLAN CHECK	BY	DATE	Last Saved By: spwsjt Aug 27, 2013 - 1:43pm			
			REGION NO.	STATE	FED. AID PROJ. NO.	SURVEY NO.
			10	WASH.		4346
			DESIGNED BY:	DRAWN BY:		
			BAC, JCR	SJT, JCR		
			FIELD BOOK(S):	UPI#		
				12-0059-1		
			DATE	NO.	REVISION	BY

PRELIMINARY

60 PERCENT SUBMITTAL

SNOHOMISH COUNTY
DEPARTMENT OF
PUBLIC WORKS

FUNDING NO. RR9322

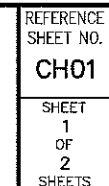
WELLINGTON HILLS
240TH ST SE IMPROVEMENTS

SIGNAL PLAN

REFERENCE
SHEET NO.
SP02

SHEET
XX
OF
XX
SHEETS

S:\PW Project Data Management\6-PROJECTS\UP\Year 2012\12-0059-12 CADD\2.1 production data\2.1 Drawings\Design\PSI\12-0059 CH.dwg Chan2-50x-1 12/16/2013 3:13:41 PM sswsit 1:2

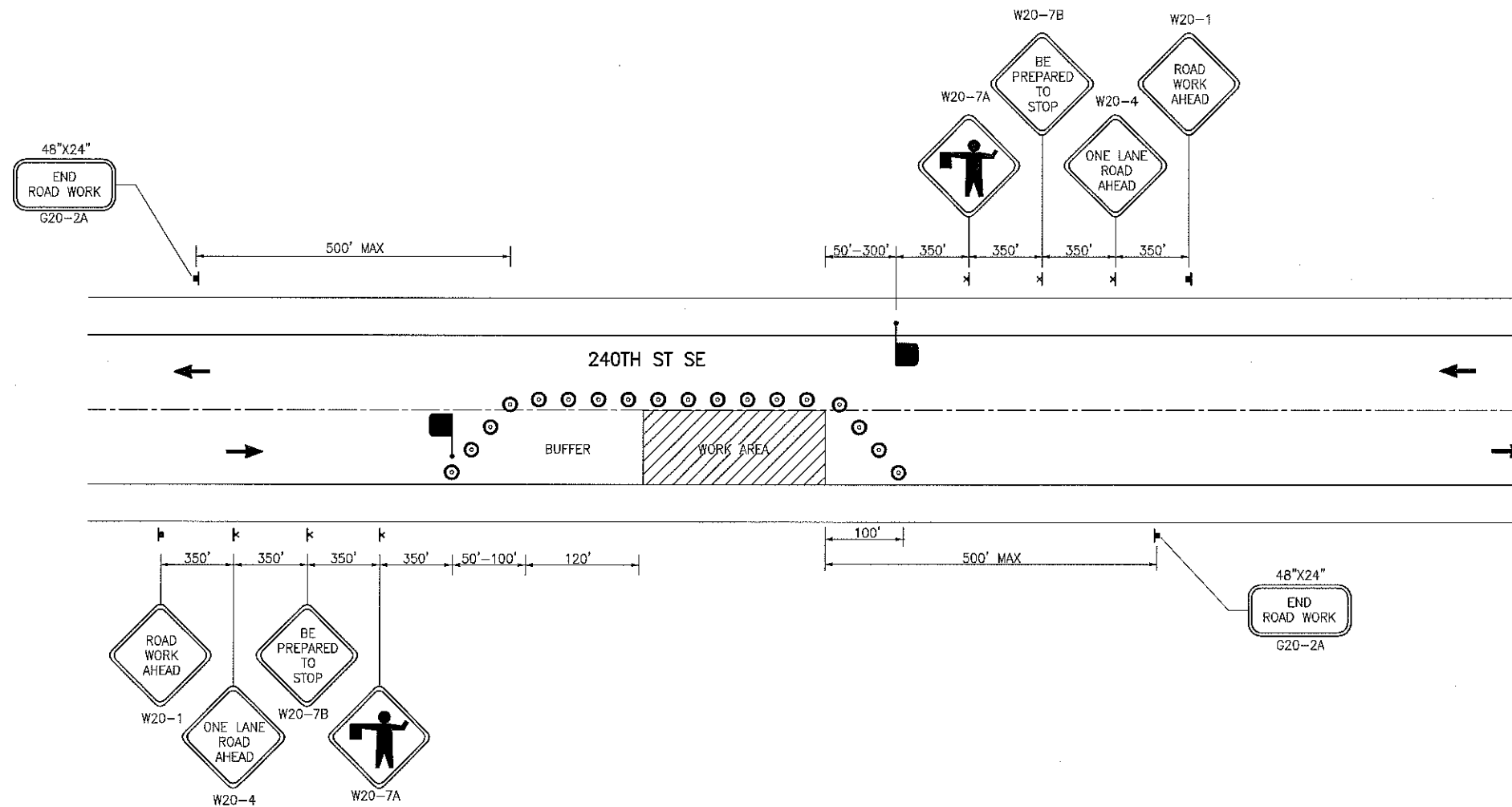


S:\PW Project Data Management\6-PROJECTS\ UPI Year 2012\12-0059-112 CADD\12.1 production data\2.1 Drawings\Design\SEI\2-0059 CH.dwg, Chan2-50x-2, 12/16/2013 3:13:43 PM, spwsl, 1,2

SHEET
2
OF
2
SHEETS

	CLASS A SIGN LOCATION
	CLASS B SIGN LOCATION
	TRAFFIC SAFETY DRUM
	WORK ZONE
	FLAGGER

1. FLOODLIGHTS SHALL BE PROVIDED TO MARK FLAGGER STATIONS AT NIGHT.
2. ALL SIGNS SHALL BE BLACK ON ORANGE AND BE 48"X48" IN SIZE UNLESS OTHERWISE NOTED.
3. STEADY BURNING WARNING LIGHTS (TYPE C, MUTCD) SHOULD BE USED TO MARK CHANNELIZATION AT NIGHT AS NEEDED.
4. CONTRACTOR TO POSITION SPOTTERS AS REQUIRED TO ACCOMMODATE WORK ACTIVITIES.
5. THE CONTRACTOR MUST PLACE THE APPROPRIATE CONSTRUCTION WARNING SIGNS BEFORE CONSTRUCTION BEGINS AND MAINTAIN SIGNAGE TO THE CURRENT STANDARDS LISTED IN PART VI OF THE MUTCD THROUGHOUT THE DURATION OF CONSTRUCTION.
6. THE CONTRACTOR MUST INSTALL SUCH APPROPRIATE WARNING SIGNS AS CONDITIONS DICTATE: I.E. ROUGH ROAD AHEAD, ABRUPT EDGE, BUMP, LOOSE GRAVEL, MOTORCYCLES USE EXTREME CAUTION, ETC.
7. THE USE OF SLOW OR CAUTION SIGNS IS NOT APPROVED.
8. ADVISORY SPEEDS ARE NOT PERMITTED UNLESS APPROVED BY THE SNOHOMISH COUNTY TRAFFIC ENGINEER.
9. WARNING LIGHTS FOR CHANNELIZING DEVICES SHALL BE USED AS NECESSARY. PARTICULAR ATTENTION SHOULD BE GIVEN TO ASSURING THAT CHANNELIZING DEVICES ARE MAINTAINED AND KEPT CLEAN, VISIBLE, AND PROPERLY POSITIONED AT ALL TIMES.
10. ADDITIONAL SIGNS OR TRAFFIC CONTROL DEVICES MAY BE REQUIRED WHEN WORKING IN OR NEAR INTERSECTIONS.
11. IF THERE IS OTHER UTILITY WORK IN THE AREA, THE CONTRACTOR SHALL COORDINATE EFFORTS TO ENSURE EFFICIENCY, CORRECT SIGNAGE, AND PROPER VEHICULAR AND PEDESTRIAN MOVEMENT THROUGH THE WORK ZONE.
12. THE CONTRACTOR MUST PROVIDE PEDESTRIAN FACILITIES OR FLAGGERS MUST ASSIST PEDESTRIANS THROUGH THE WORK ZONE.
13. THE CONTRACTOR SHALL COORDINATE WITH THE SCHOOL DISTRICT TO ENSURE SAFETY AND EFFICIENCY.
14. SIGNS, MARKINGS AND ROADWAY CONDITIONS MUST BE REPAIRED OR REPLACED AS NECESSARY WHEN CONTRACTOR COMPLETES PROJECT.
15. PROVIDE ACCESS TO DRIVEWAYS AT ALL TIMES.
16. MAINTAIN 10' LANES AT ALL TIMES.
17. COVER CONFLICTING SIGNS



CHANNELIZATION DEVICE SPACING (FT)		
MPH	TAPER	TANGENT
≥50	40	80
≥35 & ≤50	30	60
UNDER 35	20	40

PLAN CHECK	BY	DATE								Last Saved By: spwajt Aug 20, 2013 - 10:27am			
										REGION NO.	STATE	FED. AID PROJ. NO.	SURVEY NO.
										10	WASH.		4346
										DESIGNED BY: BAC		DRAWN BY: SJT	
										FIELD BOOK(S):		UPI# 12-0059-1	
			DATE	NO.	REVISION				BY				

PRELIMINARY

SNOHOMISH COUNTY
DEPARTMENT OF
PUBLIC WORKS

FUNDING NO. RR9322

WELLINGTON HILLS
240TH ST SE IMPROVEMENTS

TRAFFIC CONTROL PLAN

REFERENCE
SHEET NO.
TC01

SHEET
XX
OF
XX
SHEETS

	CLASS A SIGN LOCATION
	CLASS B SIGN LOCATION
	TRAFFIC SAFETY DRUM
	WORK ZONE
	FLAGGER

1. FLOODLIGHTS SHALL BE PROVIDED TO MARK FLAGGER STATIONS AT NIGHT.
2. ALL SIGNS SHALL BE BLACK ON ORANGE AND BE 48"x48" IN SIZE UNLESS OTHERWISE NOTED.
3. STEADY BURNING WARNING LIGHTS (TYPE C, MUTCD) SHOULD BE USED TO MARK CHANNELIZATION AT NIGHT AS NEEDED.
4. CONTRACTOR TO POSITION SPOTTERS AS REQUIRED TO ACCOMMODATE WORK ACTIVITIES.
5. THE CONTRACTOR MUST PLACE THE APPROPRIATE CONSTRUCTION WARNING SIGNS BEFORE CONSTRUCTION BEGINS AND MAINTAIN SIGNAGE TO THE CURRENT STANDARDS LISTED IN PART VI OF THE MUTCD THROUGHOUT THE DURATION OF CONSTRUCTION.
6. THE CONTRACTOR MUST INSTALL SUCH APPROPRIATE WARNING SIGNS AS CONDITIONS DICTATE: I.E. ROUGH ROAD AHEAD, ABRUPT EDGE, BUMP, LOOSE GRAVEL, MOTORCYCLES USE EXTREME CAUTION, ETC.
7. THE USE OF SLOW OR CAUTION SIGNS IS NOT APPROVED.
8. ADVISORY SPEEDS ARE NOT PERMITTED UNLESS APPROVED BY THE SNOHOMISH COUNTY TRAFFIC ENGINEER.
9. WARNING LIGHTS FOR CHANNELIZING DEVICES SHALL BE USED AS NECESSARY. PARTICULAR ATTENTION SHOULD BE GIVEN TO ASSURING THAT CHANNELIZING DEVICES ARE MAINTAINED AND KEPT CLEAN, VISIBLE, AND PROPERLY POSITIONED AT ALL TIMES.
10. ADDITIONAL SIGNS OR TRAFFIC CONTROL DEVICES MAY BE REQUIRED WHEN WORKING IN OR NEAR INTERSECTIONS.
11. IF THERE IS OTHER UTILITY WORK IN THE AREA, THE CONTRACTOR SHALL COORDINATE EFFORTS TO ENSURE EFFICIENCY, CORRECT SIGNAGE, AND PROPER VEHICULAR AND PEDESTRIAN MOVEMENT THROUGH THE WORK ZONE.
12. THE CONTRACTOR MUST PROVIDE PEDESTRIAN FACILITIES OR FLAGGERS MUST ASSIST PEDESTRIANS THROUGH THE WORK ZONE.
13. THE CONTRACTOR SHALL COORDINATE WITH THE SCHOOL DISTRICT TO ENSURE SAFETY AND EFFICIENCY.
14. SIGNS, MARKINGS AND ROADWAY CONDITIONS MUST BE REPAIRED OR REPLACED AS NECESSARY WHEN CONTRACTOR COMPLETES PROJECT.
15. PROVIDE ACCESS TO DRIVEWAYS AT ALL TIMES.
16. MAINTAIN 10' LANES AT ALL TIMES.
17. COVER CONFLICTING SIGNS

CHANNELIZATION DEVICE SPACING (FT)		
MPH	TAPER	TANGENT
≥50	40	80
≥35 & ≤50	30	60
UNDER 35	20	40

PLAN CHECK	BY	DATE								Last Saved By: spwsjt Aug 20, 2013 - 10:27am			
										REGION NO.	STATE	FED. AID PROJ. NO.	SURVEY NO.
										10	WASH.		4346
										DESIGNED BY: BAC		DRAWN BY: SJT	
										FIELD BOOK(S):		UPI# 12-0059-1	
			DATE	NO.	REVISION				BY				

PRELIMINARY

SNOHOMISH COUNTY
DEPARTMENT OF
PUBLIC WORKS

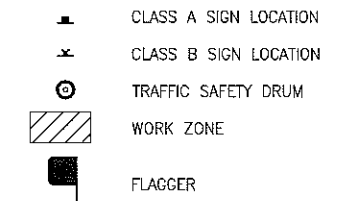
FUNDING NO. RR9322

WELLINGTON HILLS
240TH ST SE IMPROVEMENTS

TRAFFIC CONTROL PLAN

REFERENCE
SHEET NO.
TC02

SHEET
XX
OF
XX
SHEETS



1. FLOODLIGHTS SHALL BE PROVIDED TO MARK FLAGGER STATIONS AT NIGHT.
2. ALL SIGNS SHALL BE BLACK ON ORANGE AND BE 48"x48" IN SIZE UNLESS OTHERWISE NOTED.
3. STEADY BURNING WARNING LIGHTS (TYPE C, MUTCD) SHOULD BE USED TO MARK CHANNELIZATION AT NIGHT AS NEEDED.
4. CONTRACTOR TO POSITION SPOTTERS AS REQUIRED TO ACCOMMODATE WORK ACTIVITIES.
5. THE CONTRACTOR MUST PLACE THE APPROPRIATE CONSTRUCTION WARNING SIGNS BEFORE CONSTRUCTION BEGINS AND MAINTAIN SIGNAGE TO THE CURRENT STANDARDS LISTED IN PART VI OF THE MUTCD THROUGHOUT THE DURATION OF CONSTRUCTION.
6. THE CONTRACTOR MUST INSTALL SUCH APPROPRIATE WARNING SIGNS AS CONDITIONS DICTATE: I.E. ROUGH ROAD AHEAD, ABRUPT EDGE, BUMP, LOOSE GRAVEL, MOTORCYCLES USE EXTREME CAUTION, ETC.
7. THE USE OF SLOW OR CAUTION SIGNS IS NOT APPROVED.
8. ADVISORY SPEEDS ARE NOT PERMITTED UNLESS APPROVED BY THE SNOHOMISH COUNTY TRAFFIC ENGINEER.
9. WARNING LIGHTS FOR CHANNELIZING DEVICES SHALL BE USED AS NECESSARY. PARTICULAR ATTENTION SHOULD BE GIVEN TO ASSURING THAT CHANNELIZING DEVICES ARE MAINTAINED AND KEPT CLEAN, VISIBLE, AND PROPERLY POSITIONED AT ALL TIMES.
10. ADDITIONAL SIGNS OR TRAFFIC CONTROL DEVICES MAY BE REQUIRED WHEN WORKING IN OR NEAR INTERSECTIONS.
11. IF THERE IS OTHER UTILITY WORK IN THE AREA, THE CONTRACTOR SHALL COORDINATE EFFORTS TO ENSURE EFFICIENCY, CORRECT SIGNAGE, AND PROPER VEHICULAR AND PEDESTRIAN MOVEMENT THROUGH THE WORK ZONE.
12. THE CONTRACTOR MUST PROVIDE PEDESTRIAN FACILITIES OR FLAGGERS MUST ASSIST PEDESTRIANS THROUGH THE WORK ZONE.
13. THE CONTRACTOR SHALL COORDINATE WITH THE SCHOOL DISTRICT TO ENSURE SAFETY AND EFFICIENCY.
14. SIGNS, MARKINGS AND ROADWAY CONDITIONS MUST BE REPAIRED OR REPLACED AS NECESSARY WHEN CONTRACTOR COMPLETES PROJECT.
15. PROVIDE ACCESS TO DRIVEWAYS AT ALL TIMES.
16. MAINTAIN 10' LANES AT ALL TIMES.
17. COVER CONFLICTING SIGNS

CHANNELIZATION DEVICE SPACING (FT)		
MPH	TAPER	TANGENT
≥50	40	80
≥35 & ≤50	30	60
UNDER 35	20	40

PLAN CHECK	BY	DATE						Last Saved By: spwsjt Aug 20, 2013 - 10:27am				
								REGION NO.	STATE	FED. AID PROJ. NO.	SURVEY NO.	
								10	WASH.		4346	
								DESIGNED BY: BAC		DRAWN BY: SJT		
								FIELD BOOK(S):		UPI# 12-0059-1		
			DATE	NO.	REVISION	BY						

PRELIMINARY

SNOHOMISH COUNTY
DEPARTMENT OF
PUBLIC WORKS

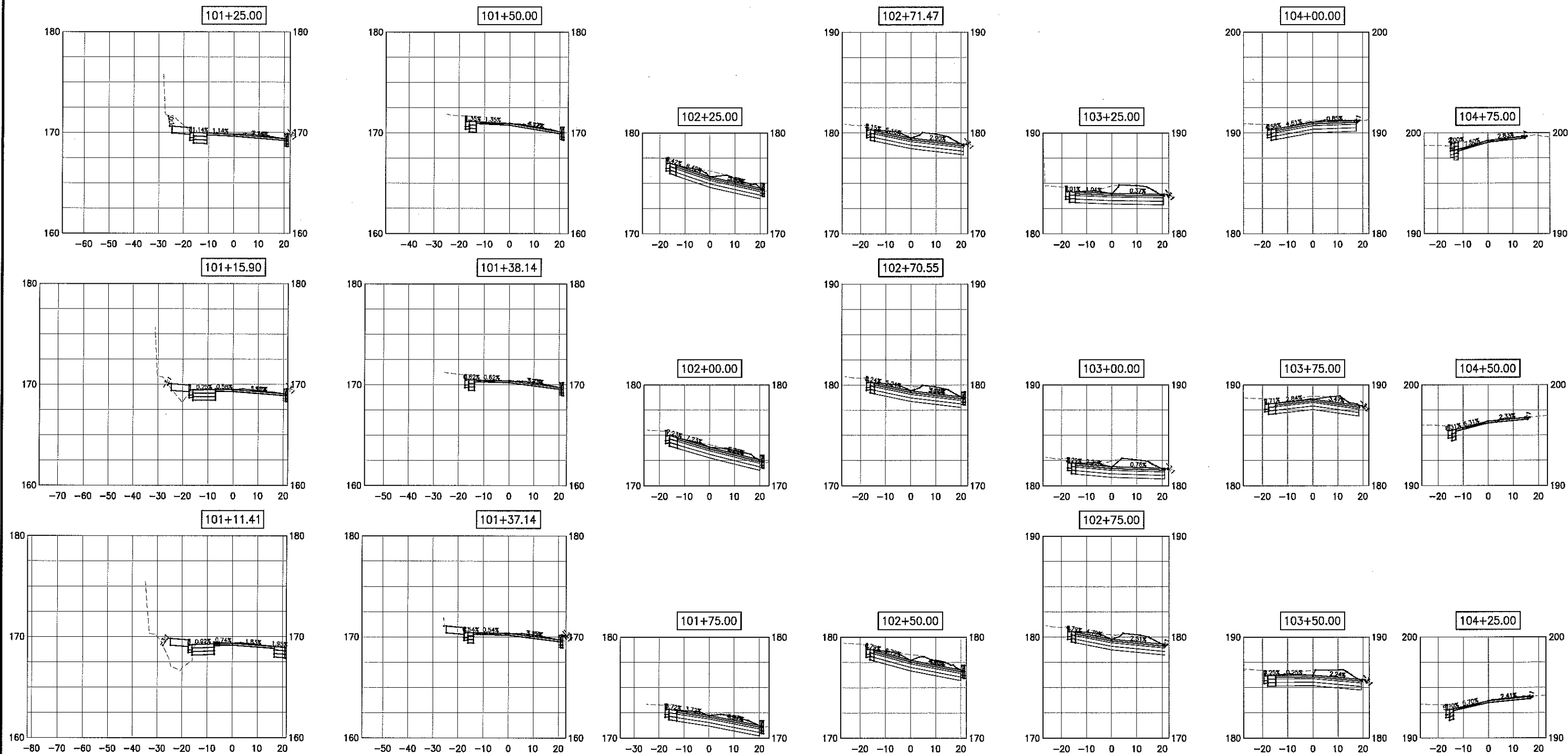
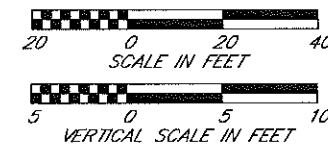
FUNDING NO. RR9322

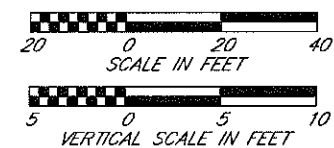
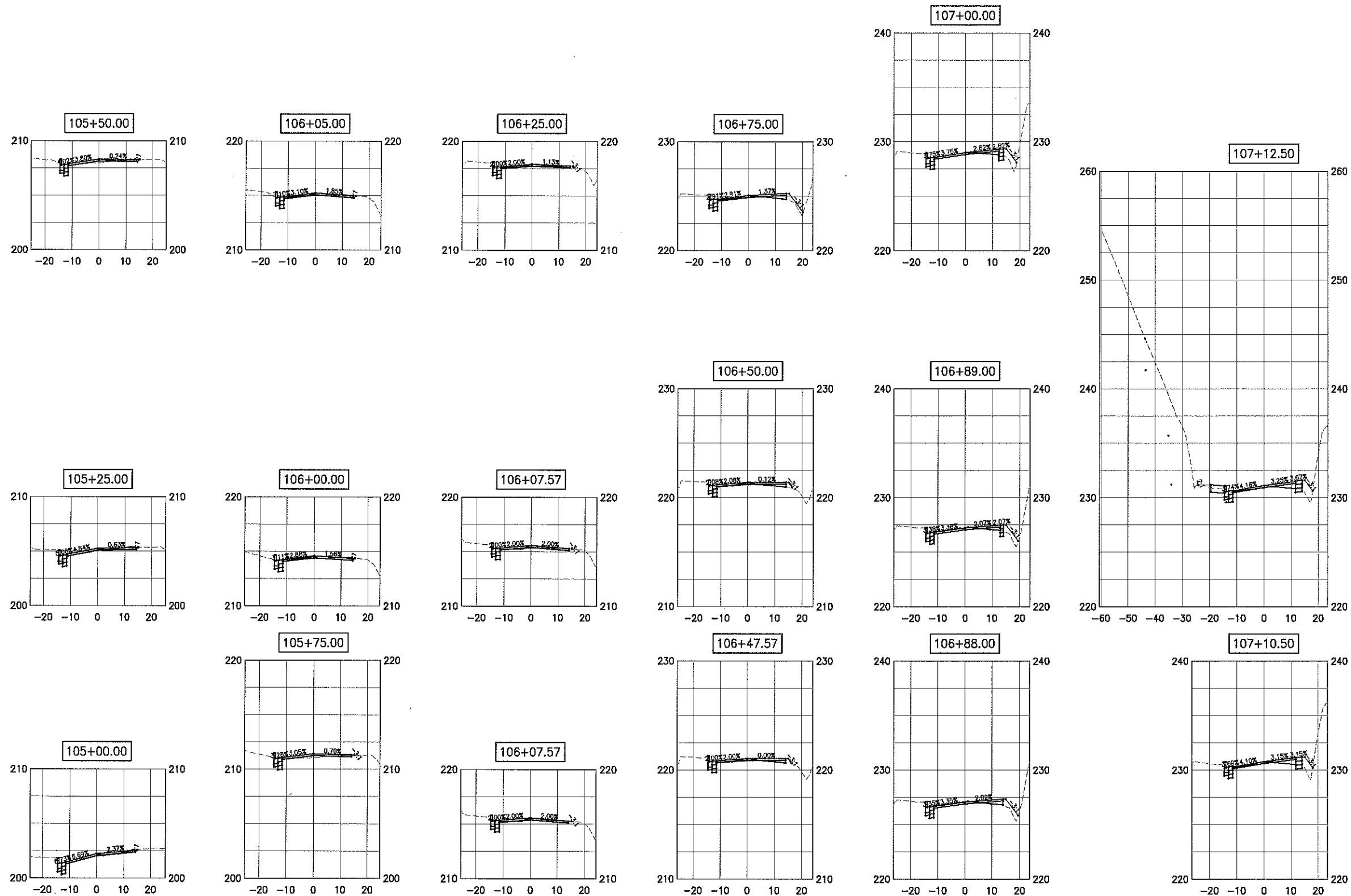
WELLINGTON HILLS
240TH ST SE IMPROVEMENTS

TRAFFIC CONTROL PLAN

REFERENCE
SHEET NO.
TC03

SHEET
XX
OF
XX
SHEETS

[illegible]



PLAN CHECK	BY	DATE								Last Saved By: spwsjt Dec 17, 2013 - 8:43am			
										REGION NO.	STATE	FED. AID PROJ. NO.	SURVEY NO.
										10	WASH.		
										DESIGNED BY: BAC		DRAWN BY: SJT	
										FIELD BOOK(S):		UPI# 12-0059-1	
			DATE	NO.	REVISION				BY				

PRELIMINARY

60 PERCENT SUBMITTAL

SNOHOMISH COUNTY
DEPARTMENT OF
PUBLIC WORKS

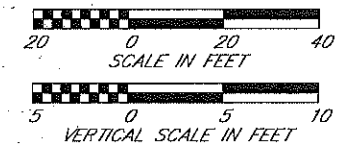
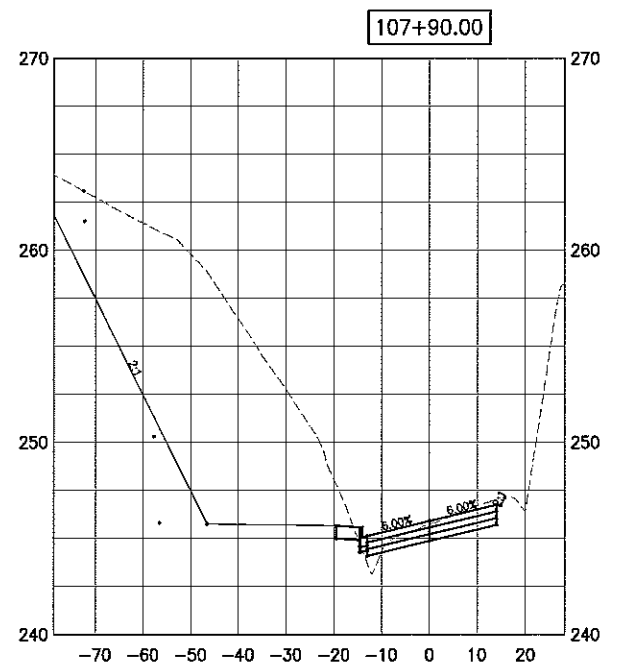
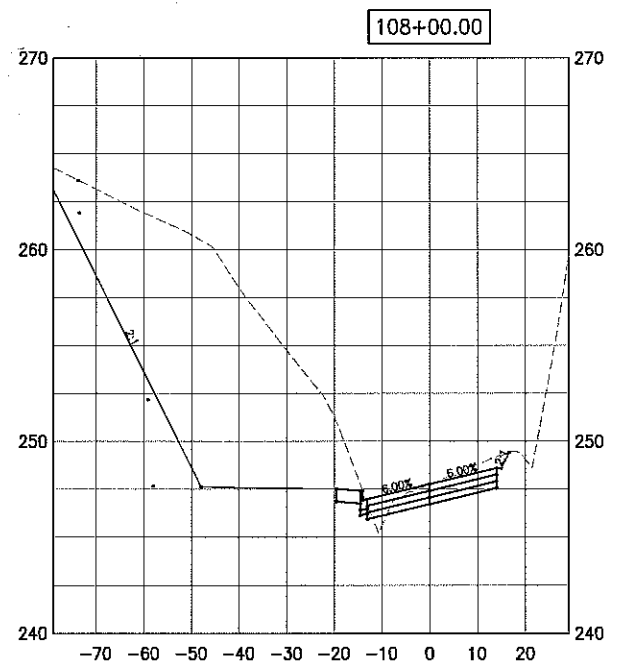
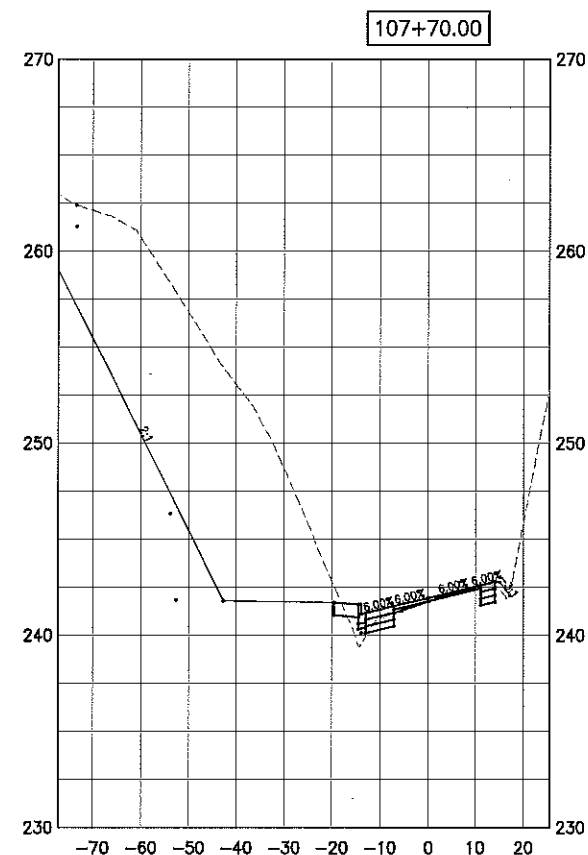
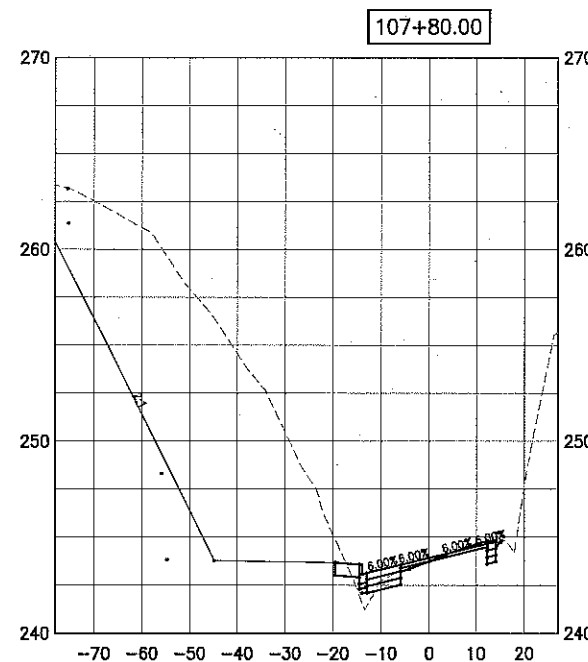
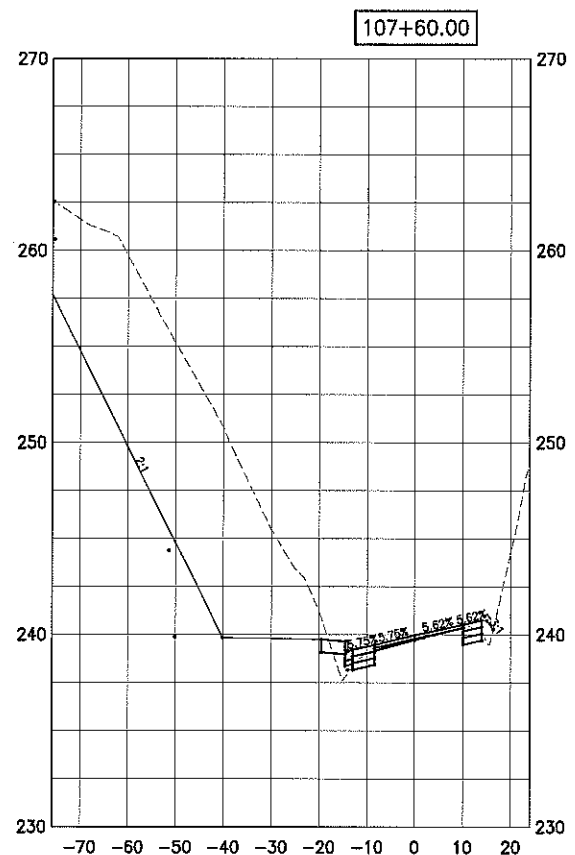
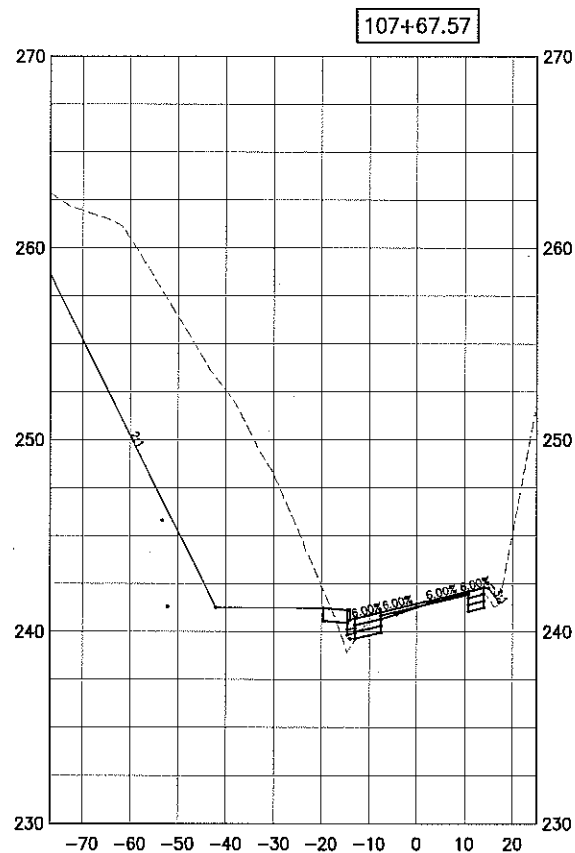
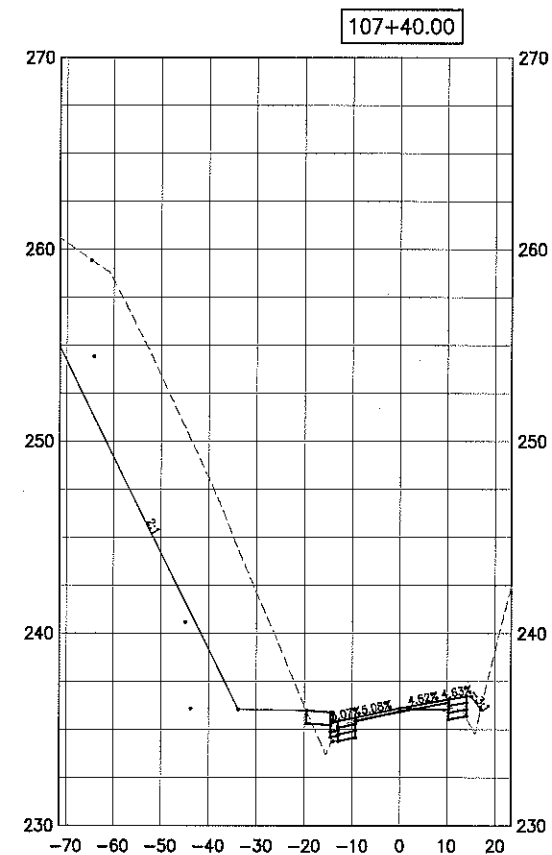
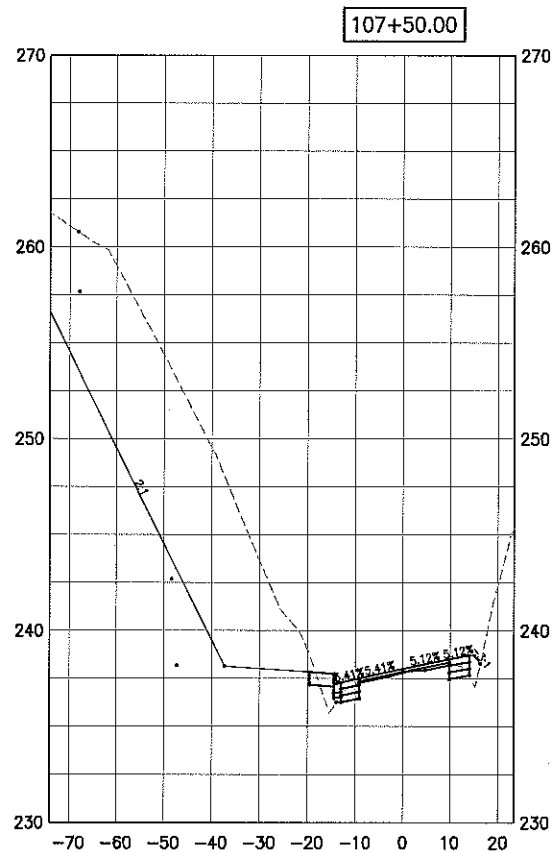
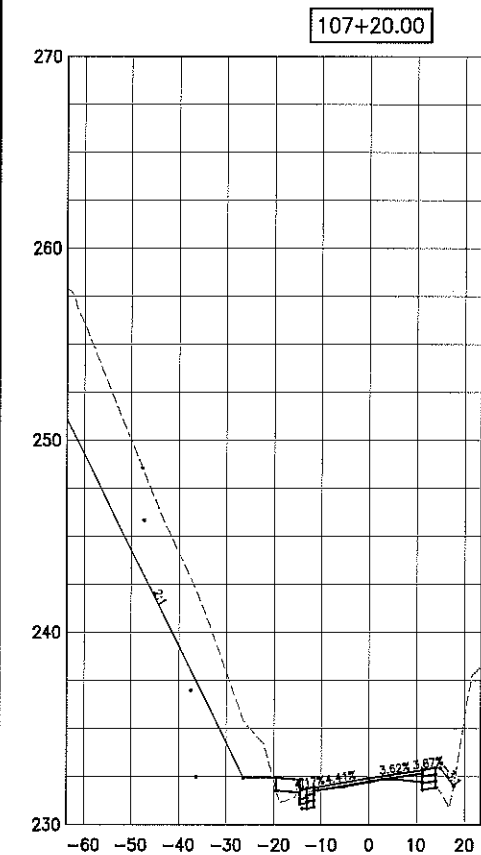
FUNDING NO. RR9322

WELLINGTON HILLS
240TH SE ST IMPROVEMENTS

CROSS SECTIONS

REFERENCE
SHEET NO.

SHEET
2
OF
11
SHEETS



PLAN	CHECK	BY	DATE							Last Saved By: spwsjt Dec 17, 2013 -- 6:43am			
										REGION NO.	STATE	FED. AID PROJ. NO.	SURVEY NO.
										10	WASH.		
										DESIGNED BY: BAC		DRAWN BY: SJT	
										FIELD BOOK(S):		UPI# 12-0059-1	
				DATE	NO.	REVISION			BY				

PRELIMINARY

60 PERCENT SUBMITTAL

SNOHOMISH COUNTY
DEPARTMENT OF
PUBLIC WORKS

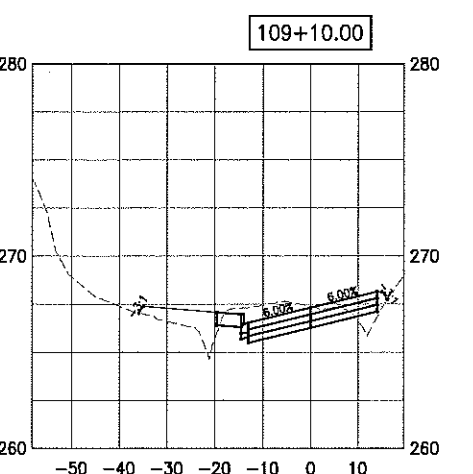
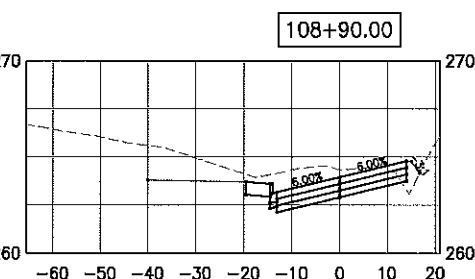
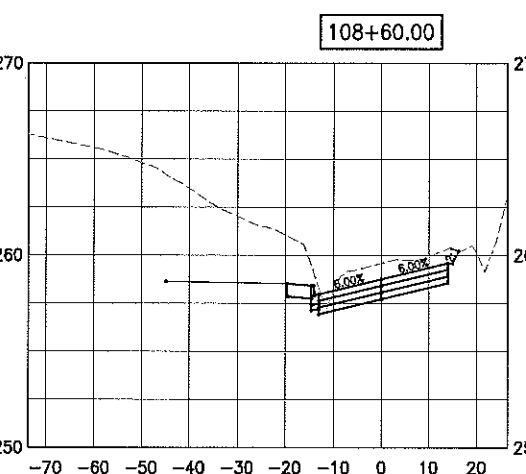
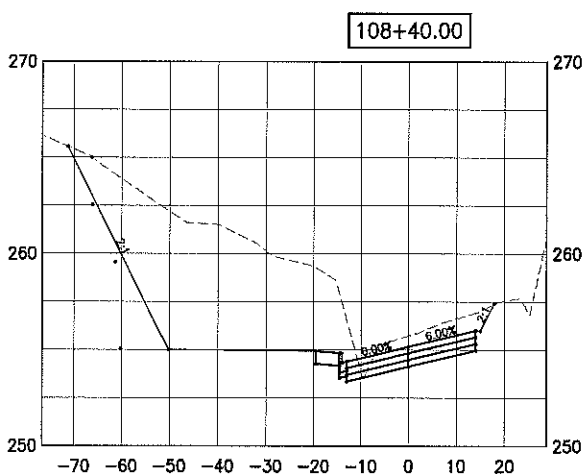
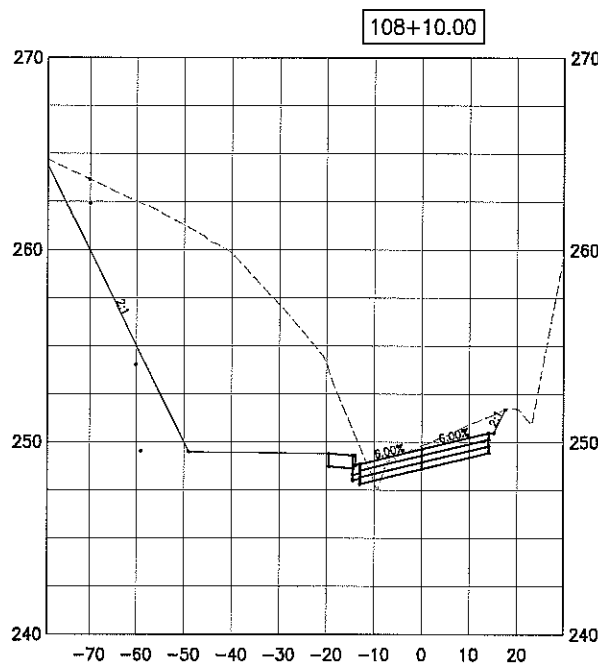
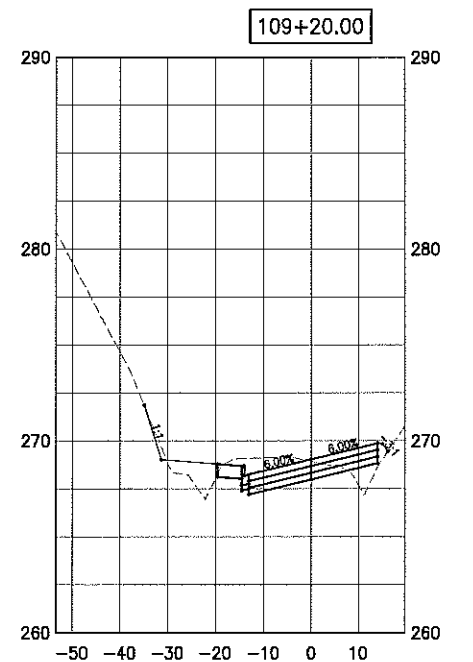
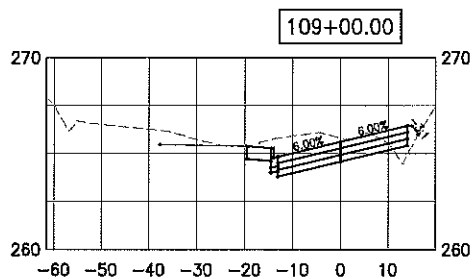
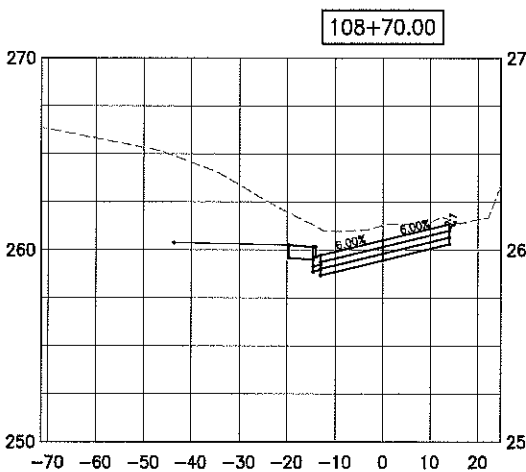
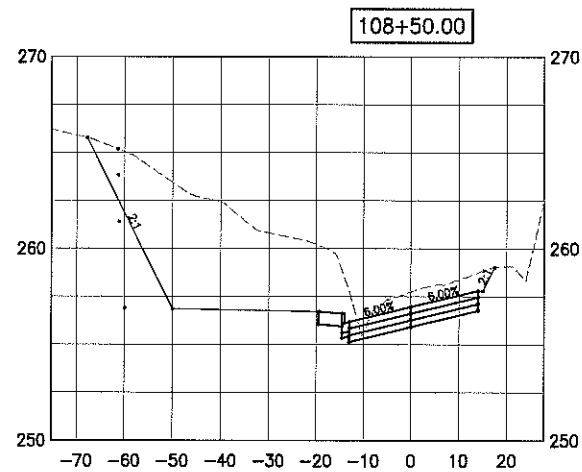
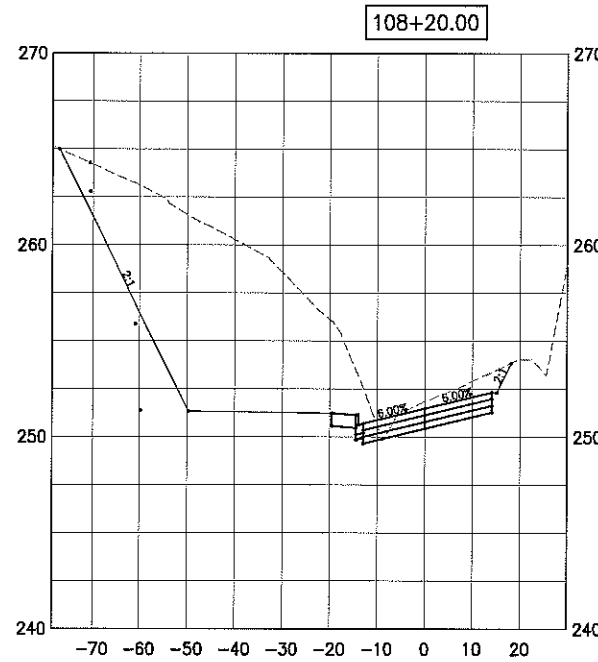
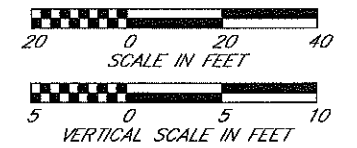
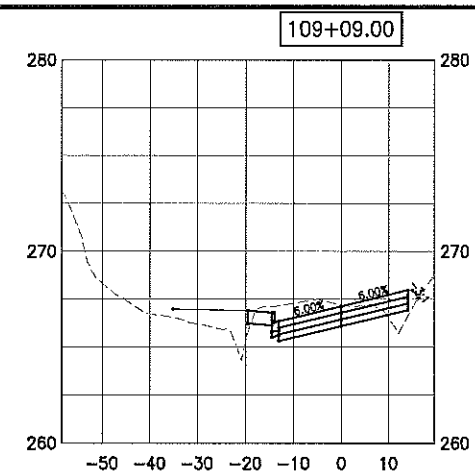
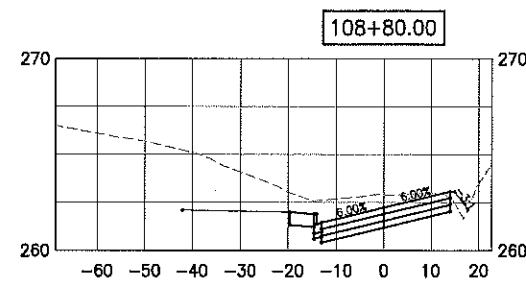
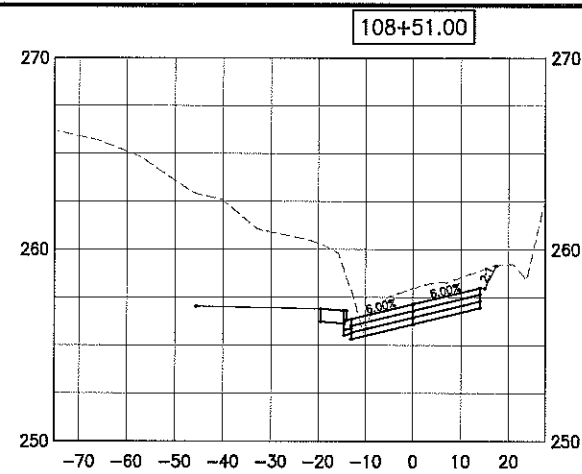
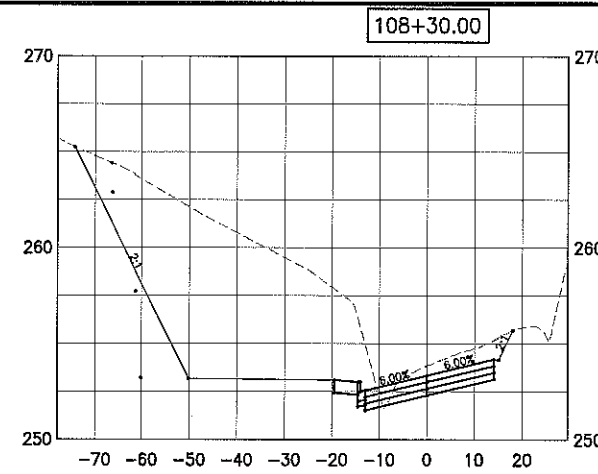
FUNDING NO. RR9322

WELLINGTON HILLS
240TH SE ST IMPROVEMENTS

CROSS SECTIONS

REFERENCE
SHEET NO.
XS3

SHEET
3
OF
11
SHEETS



PLAN	CHECK	BY	DATE								Last Saved By: spwsjt Dec 17, 2013 - 8:43am				
											REGION NO.	STATE	FED. AID PROJ. NO.	SURVEY NO.	
											10	WASH.			
											DESIGNED BY: BAC			DRAWN BY: SJT	
											FIELD BOOK(S):			UPI# 12-0059-1	
				DATE	NO.	REVISION						BY			

PRELIMINARY
60 PERCENT SUBMITTAL

SNOHOMISH COUNTY
DEPARTMENT OF
PUBLIC WORKS

FUNDING NO. RR9322

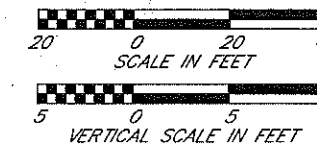
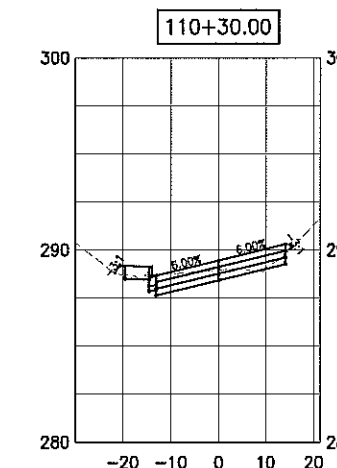
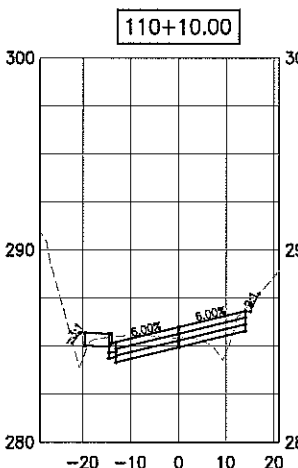
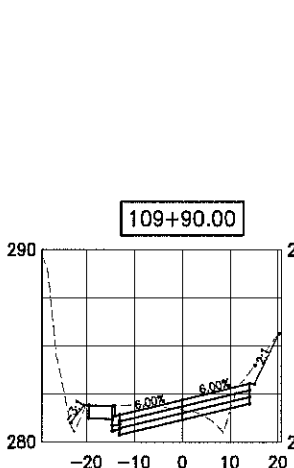
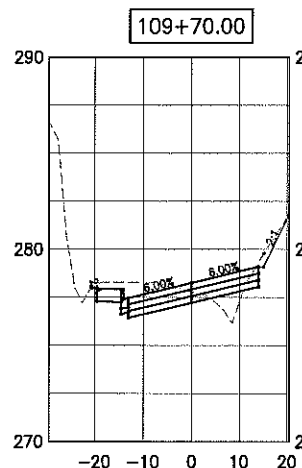
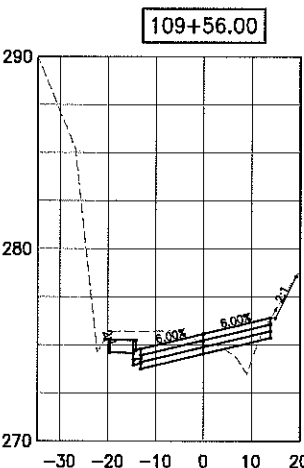
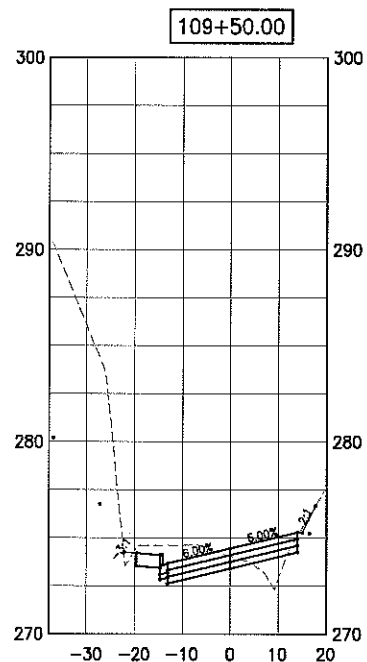
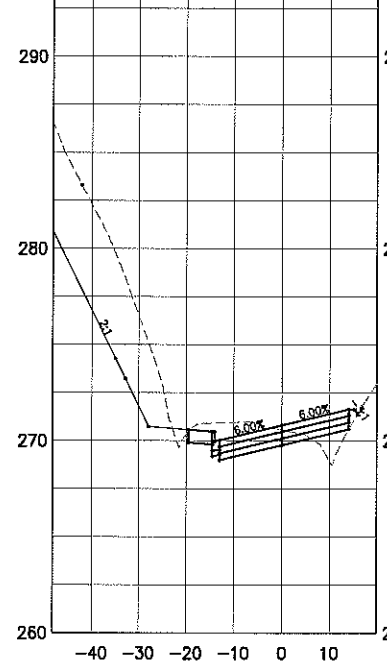
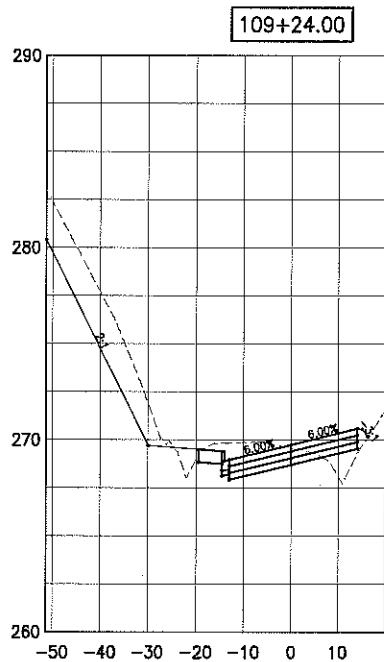
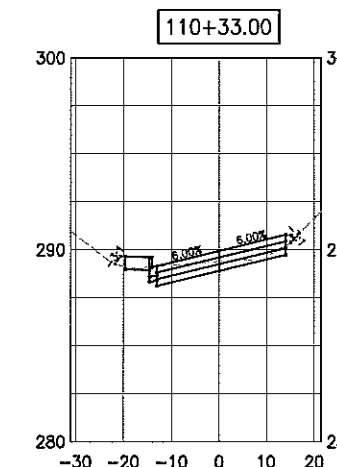
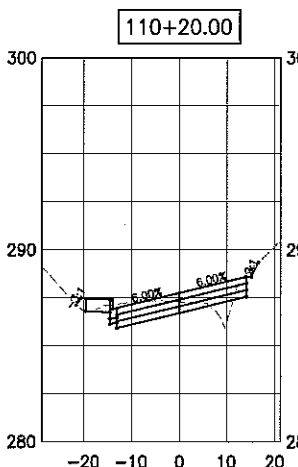
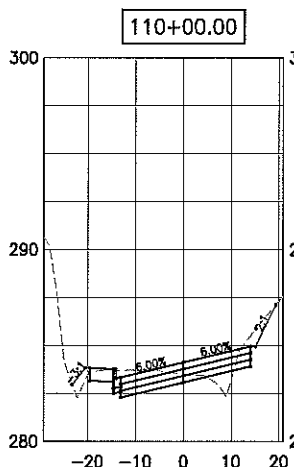
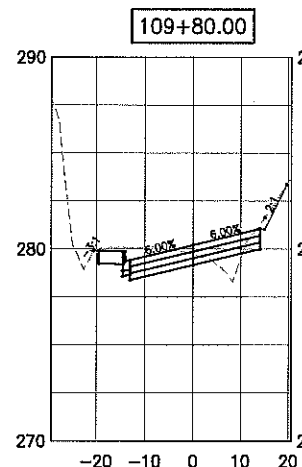
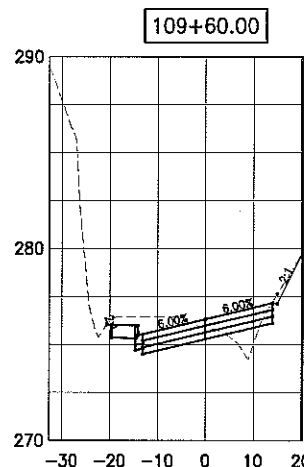
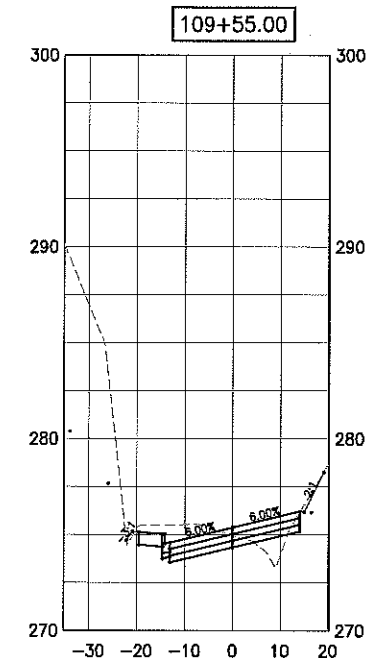
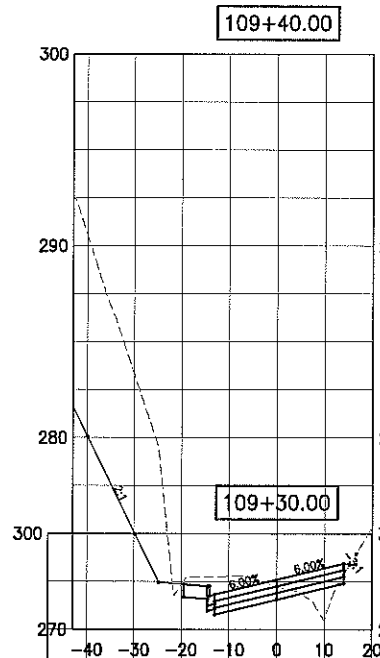
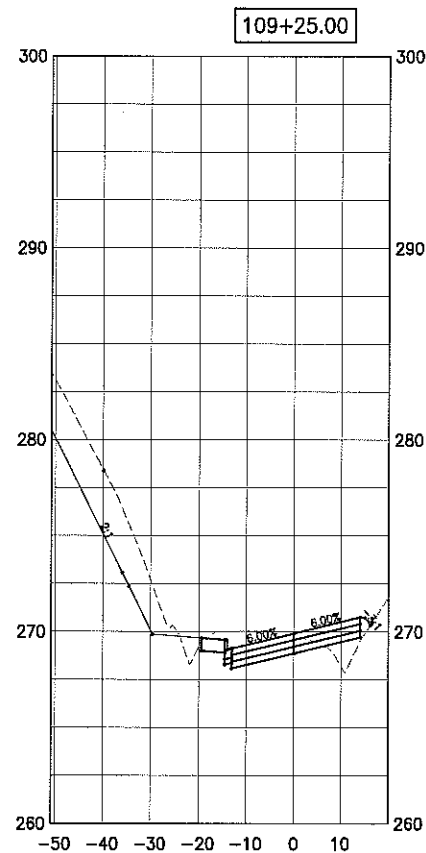
WELLINGTON HILLS
240TH SE ST IMPROVEMENTS

CROSS SECTIONS

REFERENCE
SHEET NO.
XS4

SHEET
4
OF
11
SHEETS

S:\PW_Project_Data_Management\PROJECTS\UPI Year_2012\12-0059-12 CADD\2.1 Drawings\Design\Print\12-0059_PSE XSSections.dwg, XS5, 12/17/2013 8:58:00 AM, spwsjt, 1:2



PLAN CHECK	BY	DATE	DATE	NO.	REVISION	BY

Last Saved By: spwsjt Dec 17, 2013 -- 8:43am			
REGION NO.	STATE	FED. AID PROJ. NO.	SURVEY NO.
10	WASH.		
DESIGNED BY:		DRAWN BY:	
BAC		SJT	
FIELD BOOK(S):		UPI#	
		12-0059-1	

PRELIMINARY

60 PERCENT SUBMITTAL

SNOHOMISH COUNTY
DEPARTMENT OF
PUBLIC WORKS

FUNDING NO. RR9322

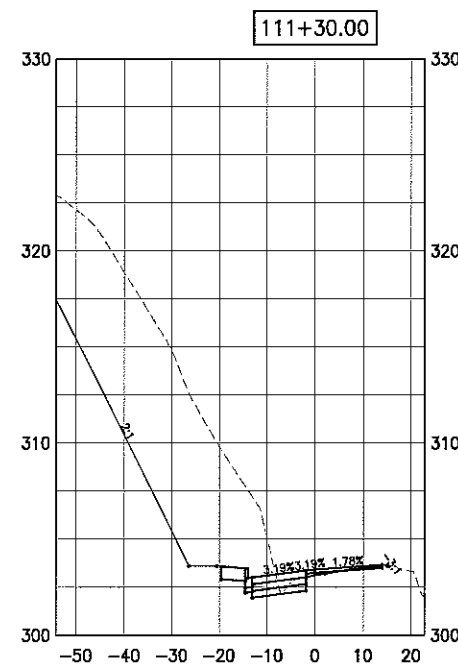
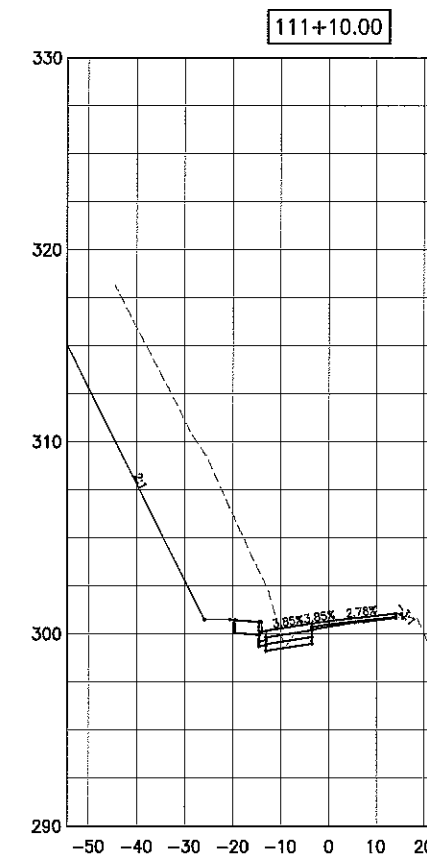
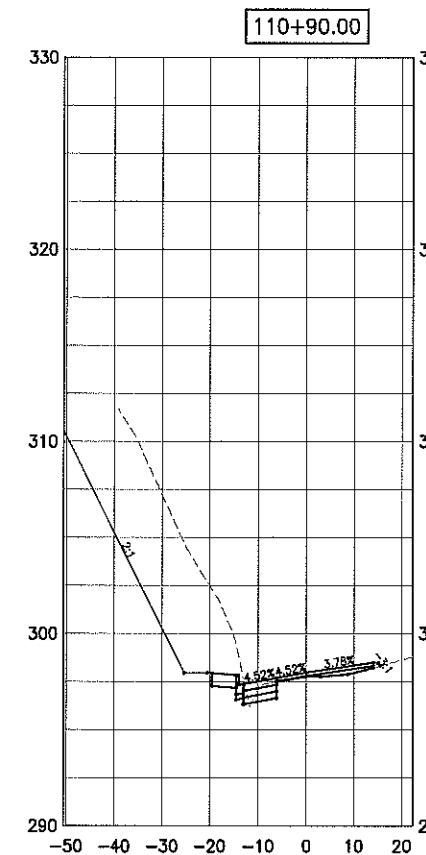
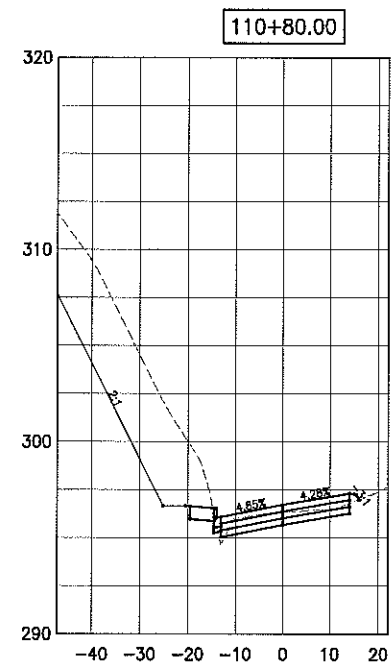
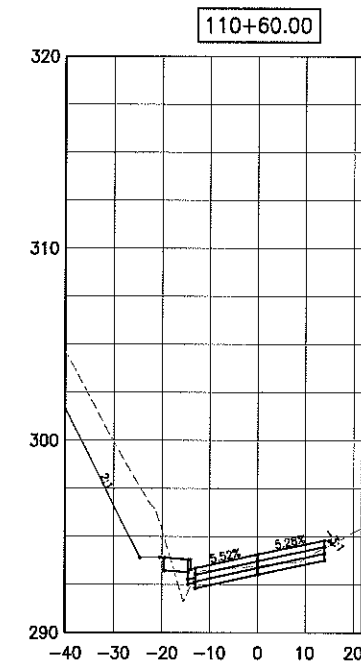
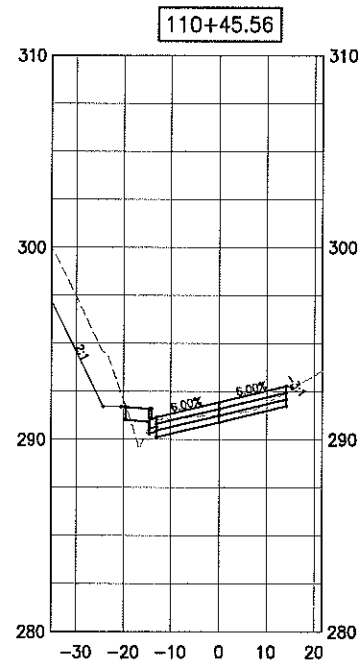
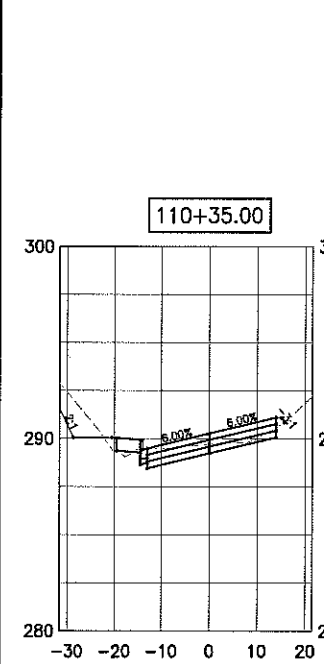
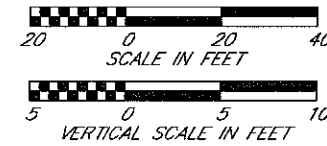
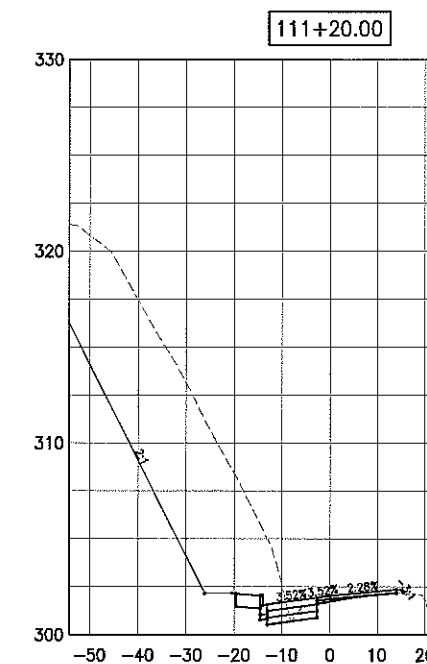
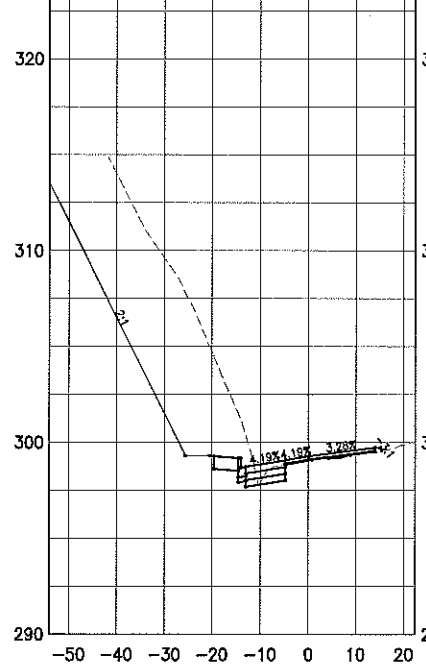
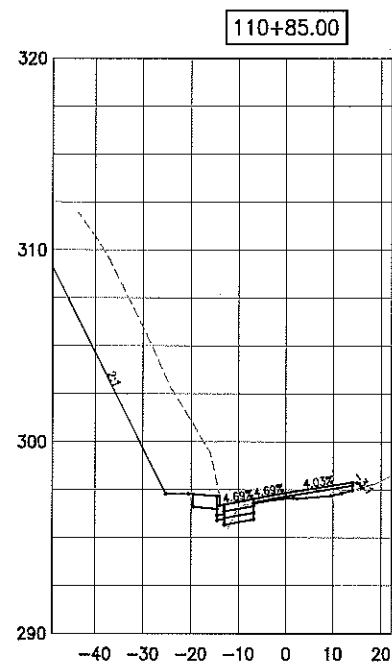
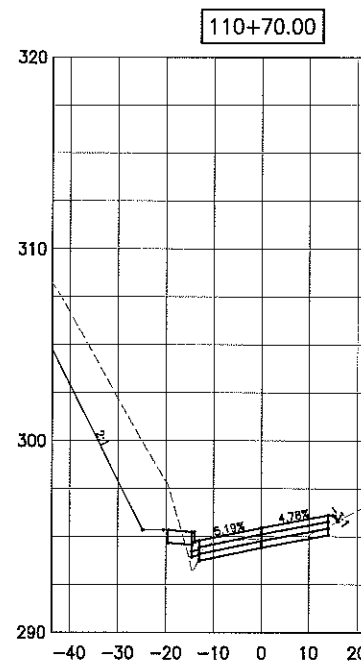
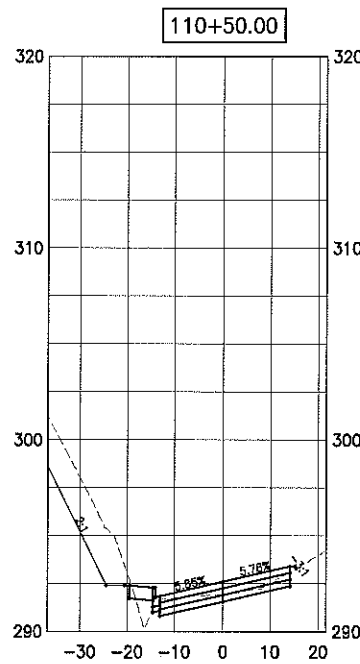
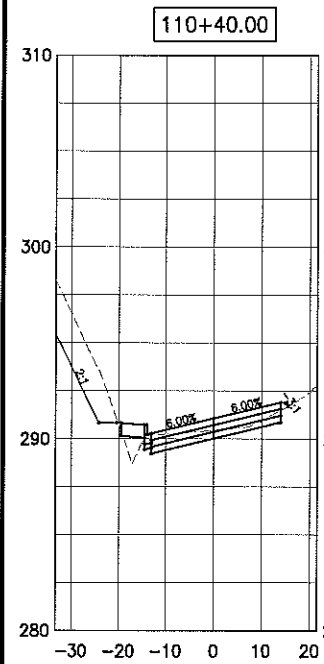
WELLINGTON HILLS
240TH SE ST IMPROVEMENTS

CROSS SECTIONS

REFERENCE
SHEET NO.
XS5

SHEET
5
OF
11
SHEETS

S:\PW_Proj\Proj\Data_Management\6-PROJECTS\UPI Year_2012\12-0059-12 CADD\2.1 production data\2.1 Drawings\Design\Primitives\12-0059_PSE XSections.dwg, XS6, 12/17/2013 8:56:03 AM, spwsjt, 12



PLAN CHECK	BY	DATE	DATE	NO.	REVISION	BY

Last Saved By: spwsjt Dec 17, 2013 - 8:43am			
REGION NO.	STATE	FED. AID PROJ. NO.	SURVEY NO.
10	WASH.		
DESIGNED BY: BAC		DRAWN BY: SGT	
FIELD BOOK(S):		UPI# 12-0059-1	

PRELIMINARY

60 PERCENT SUBMITTAL

SNOHOMISH COUNTY
DEPARTMENT OF
PUBLIC WORKS

FUNDING NO. RR9322

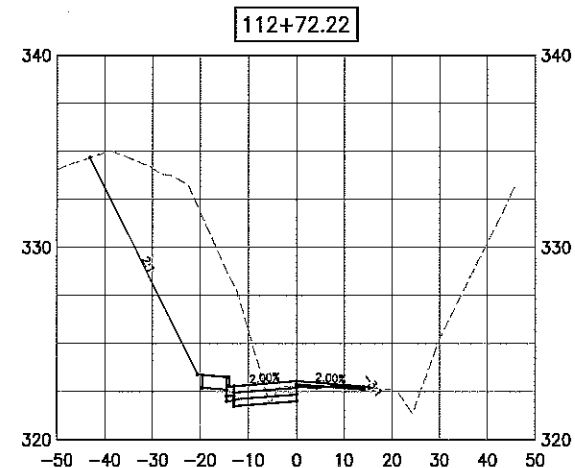
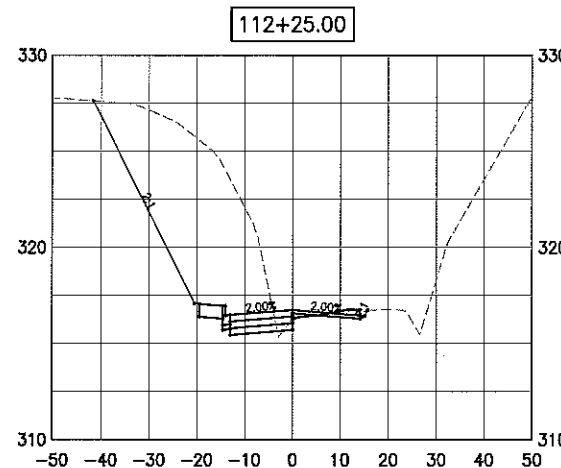
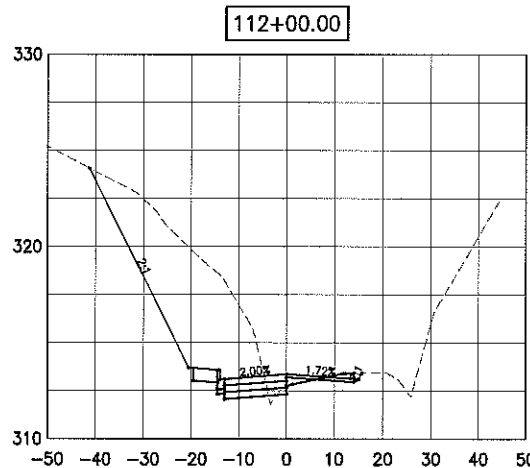
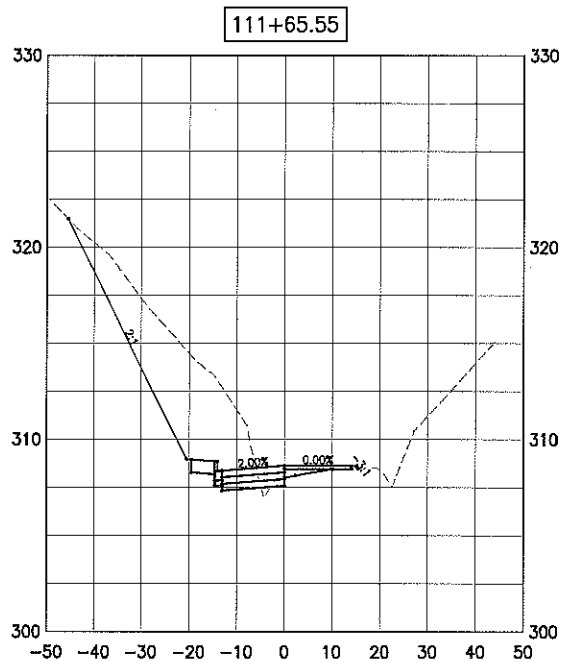
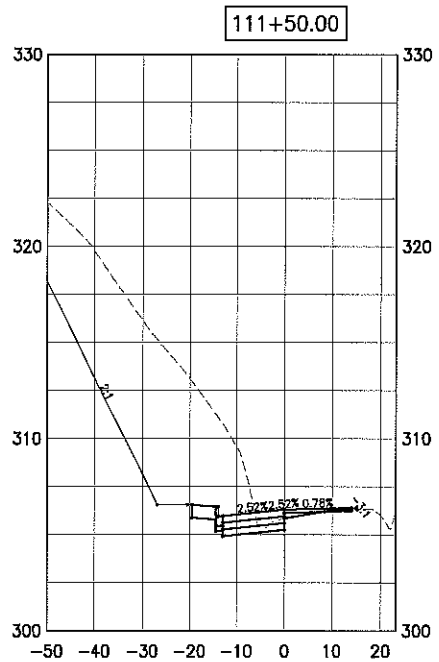
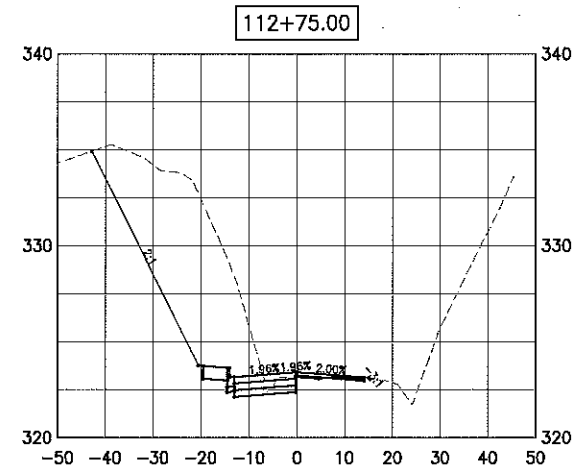
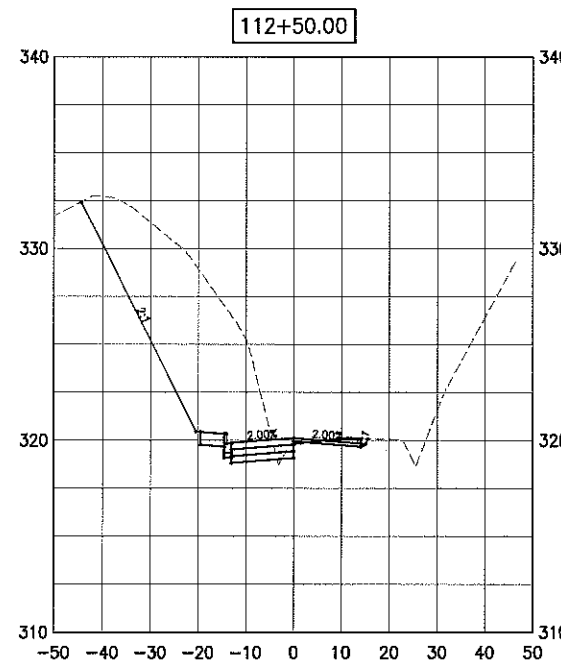
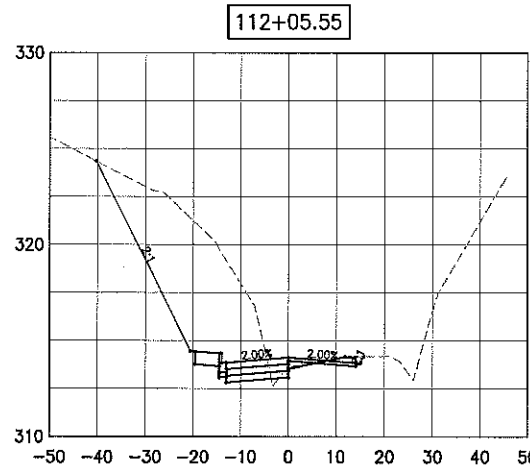
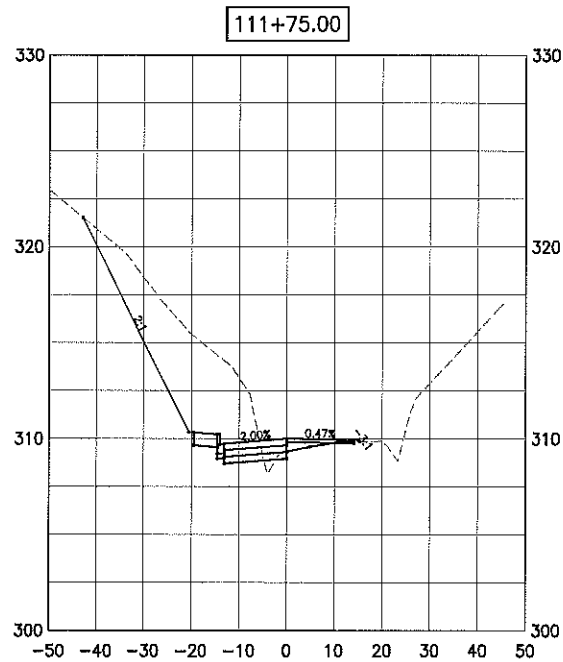
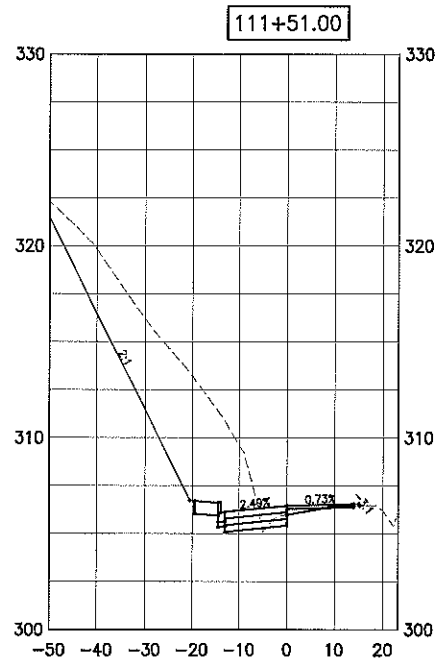
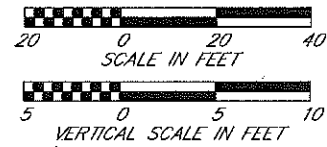
WELLINGTON HILLS
240TH SE ST IMPROVEMENTS

CROSS SECTIONS

REFERENCE
SHEET NO.
XS6

SHEET
6
OF
11
SHEETS

S:\PW_Project_Data_Management\6-PROJECTS\UPI Year_2012\12-0059-12 CADD\2.1 production data\2.1 Drawings\Design\Primitives\12-0059_PSE XSsections.dwg_XS7_12/17/2013 8:58:05 AM.spw\$jl, 1:2



PLAN CHECK	BY	DATE	DATE	NO.	REVISION	BY

Last Saved By: spwsjl Dec 17, 2013 -- 8:43am			
REGION NO.	STATE	FED. AID PROJ. NO.	SURVEY NO.
10	WASH.		
DESIGNED BY: BAC		DRAWN BY: SUT	
FIELD BOOK(S):		UPI# 12-0059-1	

PRELIMINARY

60 PERCENT SUBMITTAL

SNOHOMISH COUNTY
DEPARTMENT OF
PUBLIC WORKS

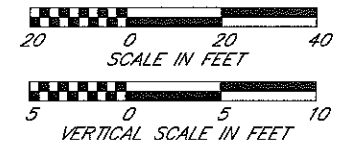
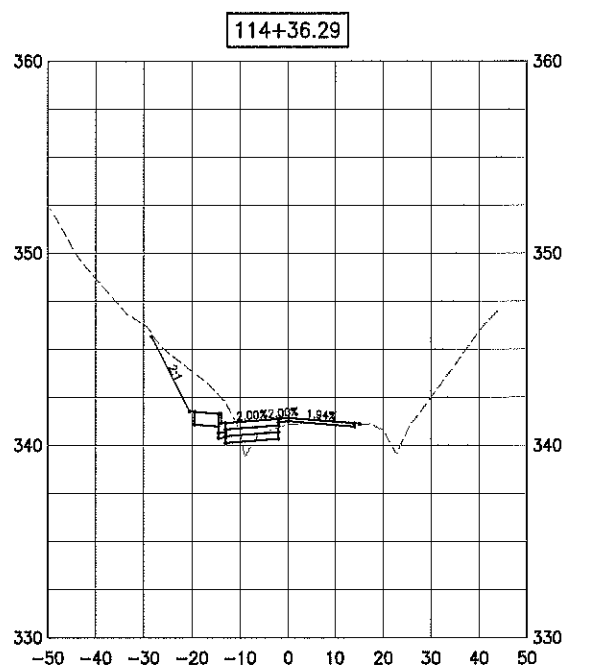
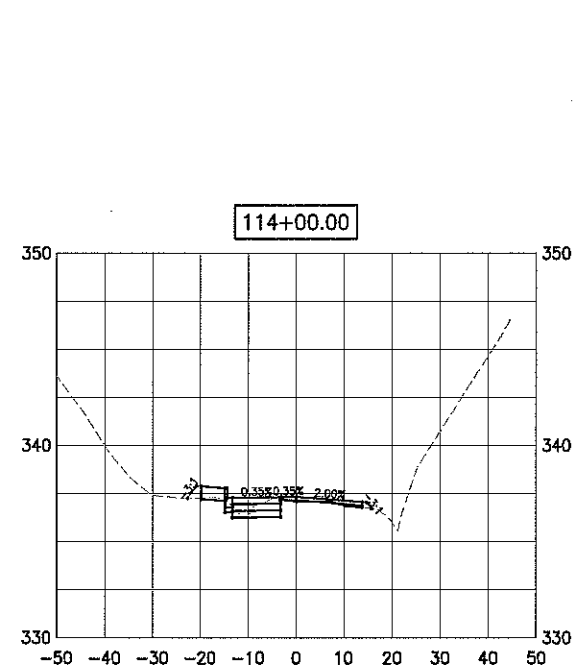
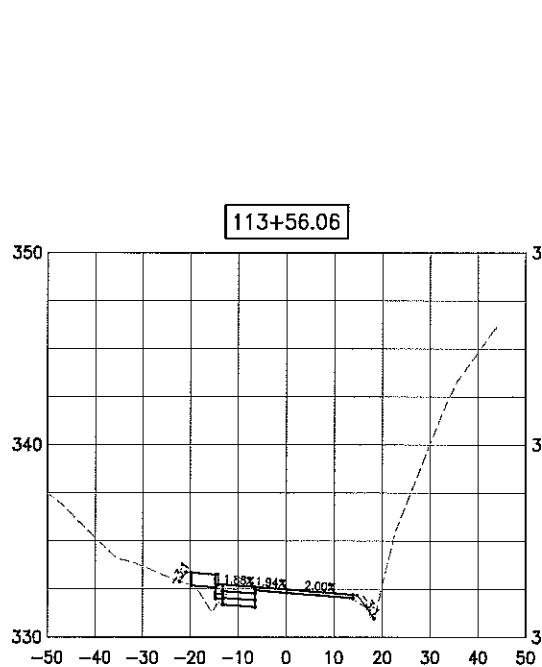
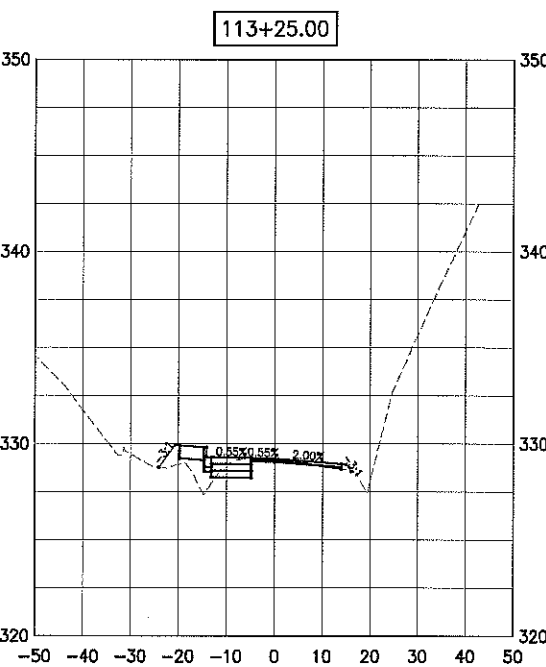
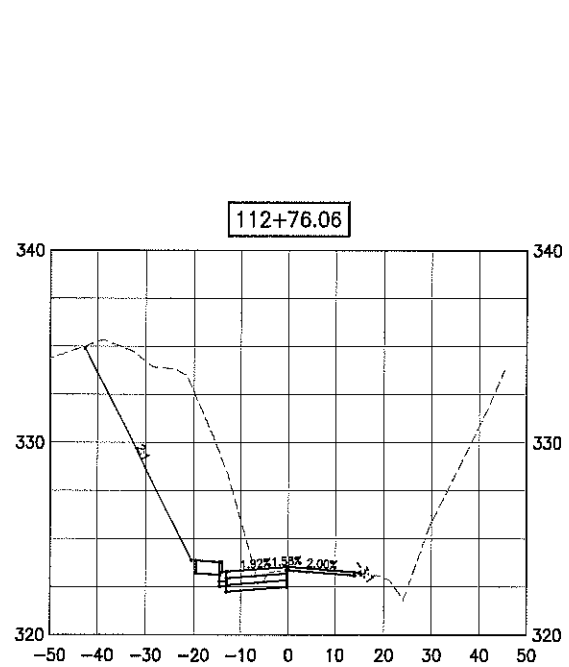
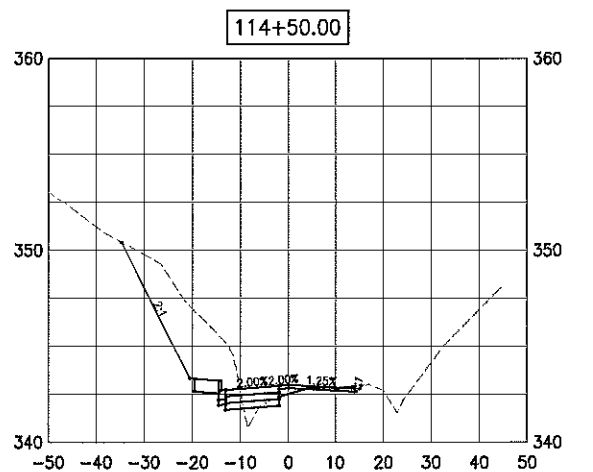
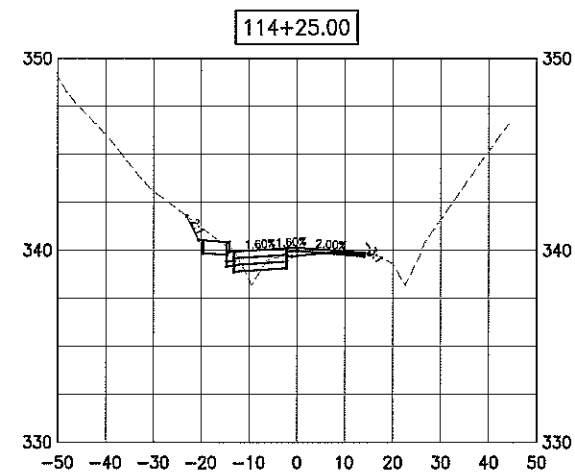
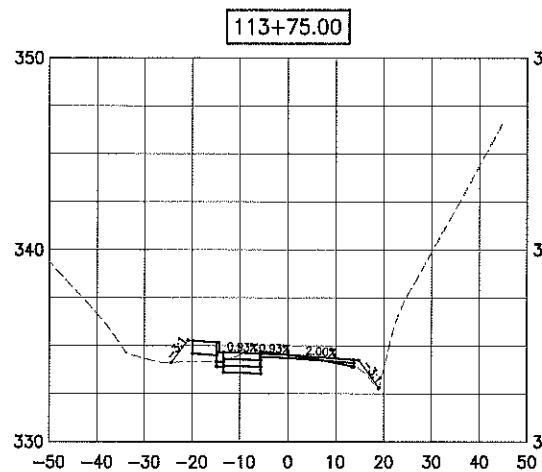
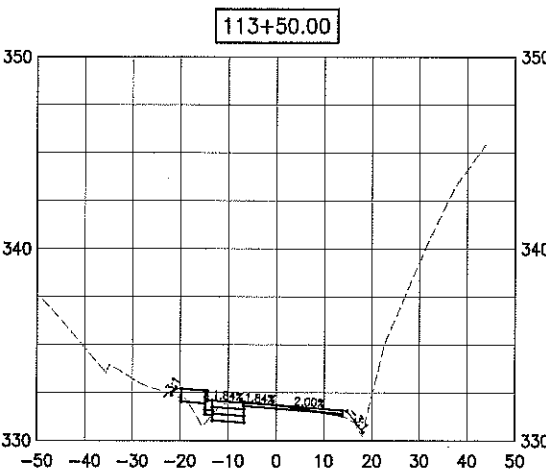
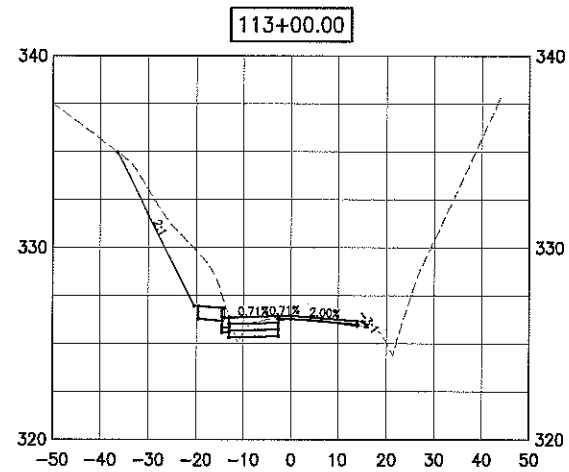
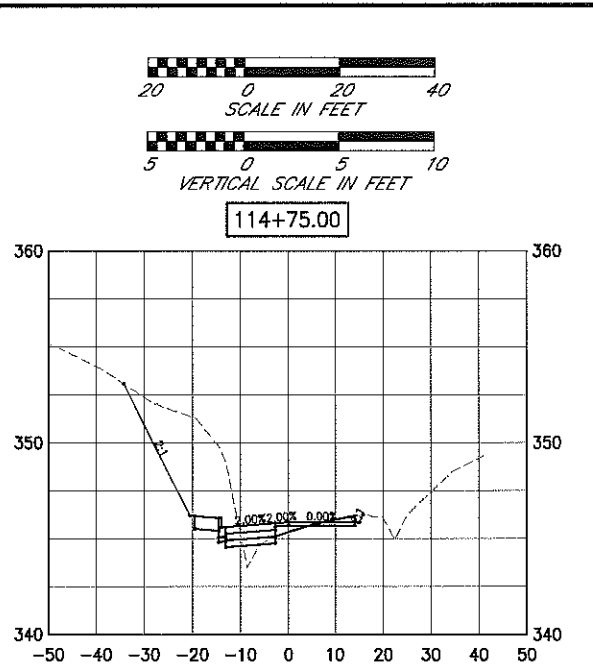
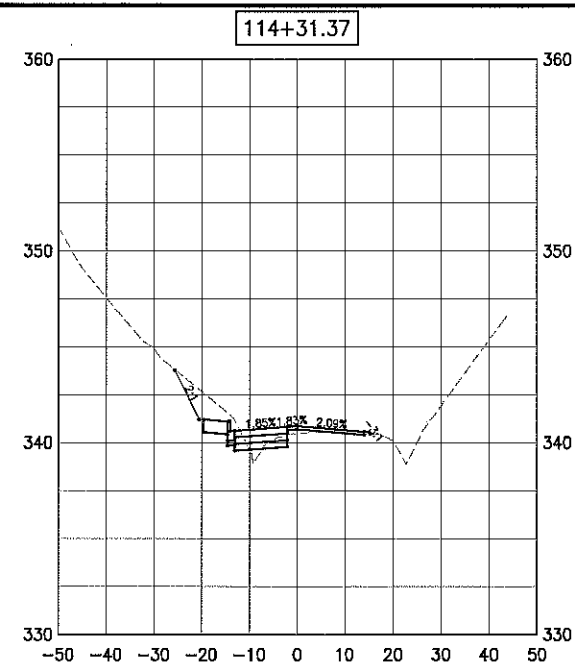
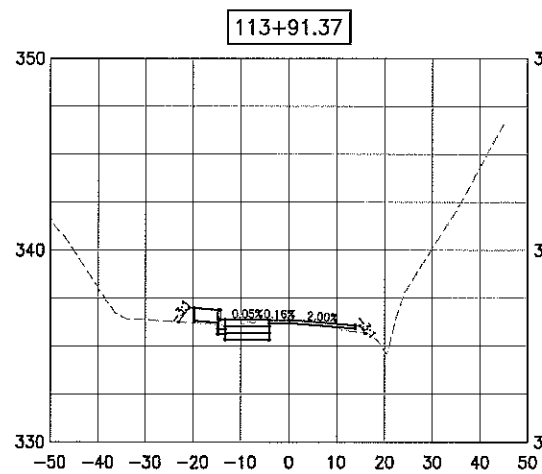
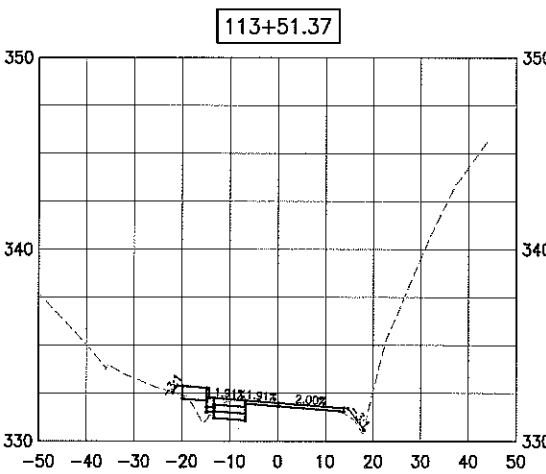
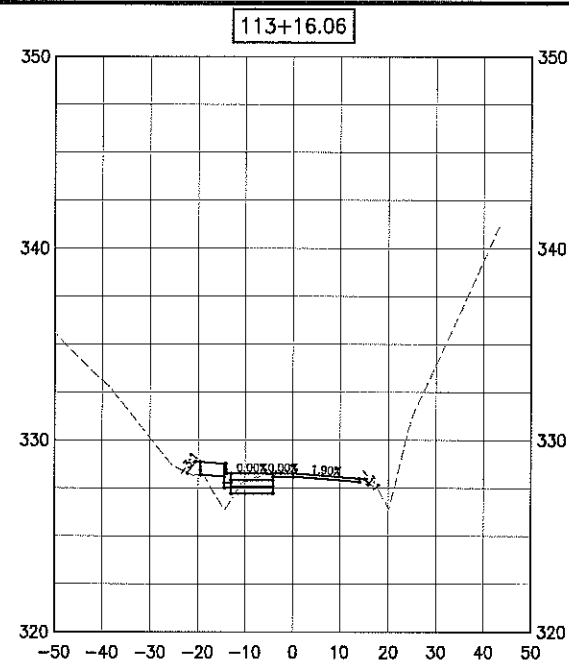
FUNDING NO. RR9322

WELLINGTON HILLS
240TH SE ST IMPROVEMENTS

CROSS SECTIONS

REFERENCE
SHEET NO.
XS7

SHEET
7
OF
11
SHEETS



PLAN CHECK	BY	DATE						Last Saved By: spwsjtl Dec 17, 2013 - 6:43am			
								REGION NO.	STATE	FED. AID PROJ. NO.	SURVEY NO.
								10	WASH.		
								DESIGNED BY: BAC		DRAWN BY: SJT	
								FIELD BOOK(S):		UPI# 12-0059-1	
			DATE	NO.	REVISION	BY					

PRELIMINARY

60 PERCENT SUBMITTAL

SNOHOMISH COUNTY
DEPARTMENT OF
PUBLIC WORKS

FUNDING NO. RR9322

WELLINGTON HILLS
240TH SE ST IMPROVEMENTS

CROSS SECTIONS

REFERENCE
SHEET NO.

SHEET
8
OF
11
SHEETS

PLAN CHECK	BY	DATE								Last Saved By: spwsjt Dec 17, 2013 -- 8:43am			
										REGION NO.	STATE	FED. AID PROJ. NO.	SURVEY NO.
										10	WASH.		
										DESIGNED BY: BAC		DRAWN BY: SJT	
										FIELD BOOK(S):		UPI# 12-0059-1	
			DATE	NO.	REVISION				BY				

60 PERCENT SUBMITTAL

FUNDING NO. RR9322

WELLINGTON HILLS
240TH SE ST IMPROVEMENTS

CROSS SECTIONS

REFERENCE
SHEET NO.
XS9
SHEET
9
OF
11
SHEETS

PRELIMINARY
60 PERCENT SUBMITTAL

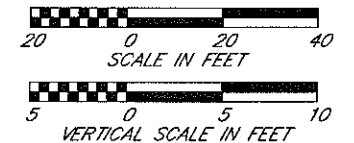
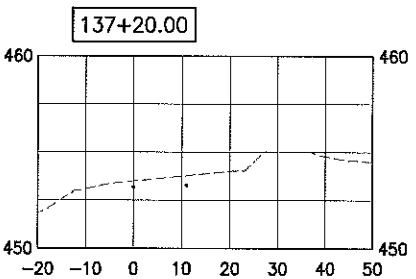
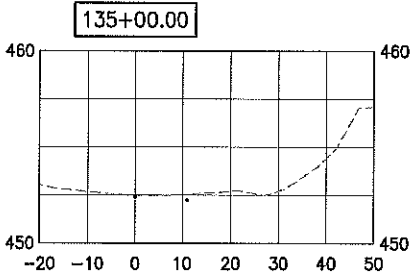
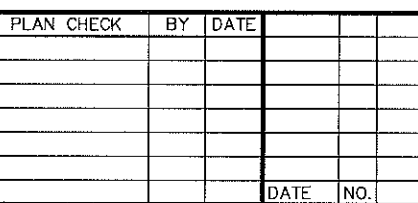
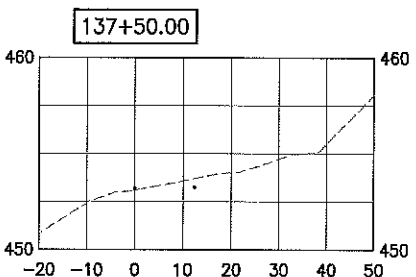
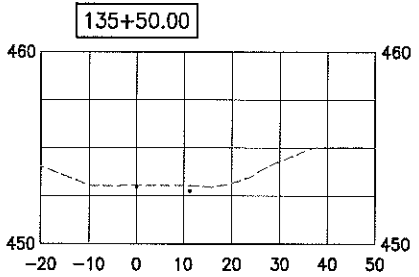
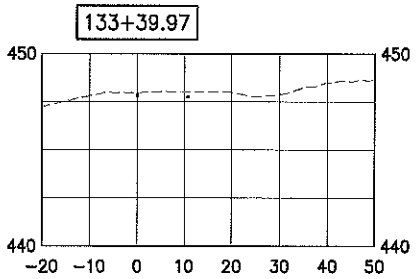
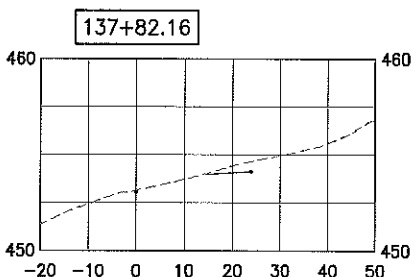
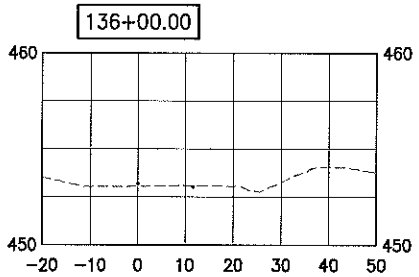
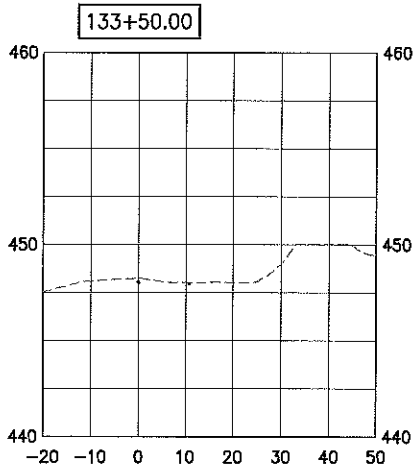
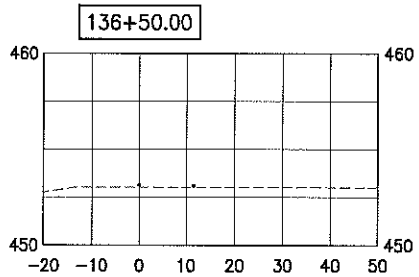
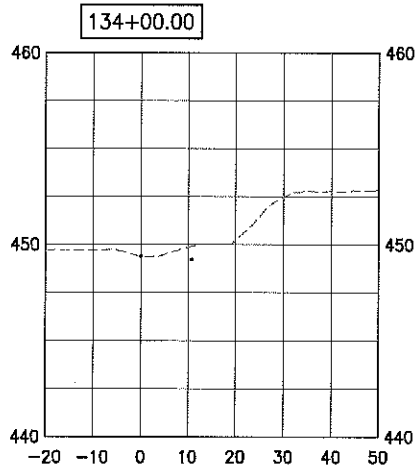
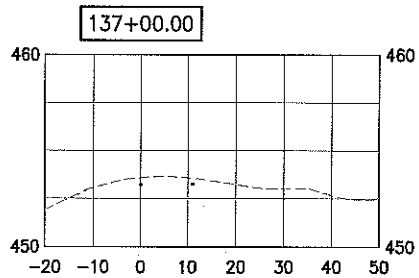
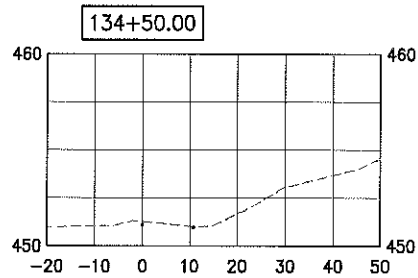
SNOHOMISH COUNTY
DEPARTMENT OF
PUBLIC WORKS
FUNDING NO. RR9322

WELLINGTON HILLS
240TH SE ST IMPROVEMENTS

CROSS SECTIONS

REFERENCE SHEET NO. XS10
SHEET 10 OF 11 SHEETS

S:\P\Project_Data_Management\PROJECTS_UPI Year_2012\12-0059-1\2 CADD\2.1 production data\2.1 Drawings\Design\Plan\12-0059_PSE_XSections.dwg, XS11, 12/17/2013 8:58:17 AM, spwsjt, 1,2



PLAN CHECK	BY	DATE	DATE	NO.	REVISION	BY

Last Saved By: spwsjt Dec 17, 2013 -- 8:43am			
REGION NO.	STATE	FED. AID PROJ. NO.	SURVEY NO.
10	WASH.		
DESIGNED BY: BAC		DRAWN BY: SJT	
FIELD BOOK(S):		UPI# 12-0059-1	

PRELIMINARY

60 PERCENT SUBMITTAL

SNOHOMISH COUNTY
DEPARTMENT OF
PUBLIC WORKS

FUNDING NO. RR9322

WELLINGTON HILLS
240TH SE ST IMPROVEMENTS

CROSS SECTIONS

REFERENCE
SHEET NO.
XS11

SHEET
10
OF
11
SHEETS

Appendix F

Stormwater Pollution Prevention Plan

Stormwater Pollution Prevention Plan (SWPPP)

For
Wellington Hills – 240th St SE Improvements
RR#9322, UPI#12-0059-1

Prepared For
Snohomish County Public Works
3000 Rockefeller Ave
Everett, WA 98201
425-388-3488

Owner/Developer	Operator/Contractor
Snohomish County	~
Public Works	
3000 Rockefeller Ave	~
Everett, WA 98201 - 4046	~

Project Site Location
Snohomish County

Certified Erosion and Sediment Control Lead
Primary CESCL: Contractor Provided
Backup CESCL: Contractor Provided

SWPPP Prepared By
Brook Chesterfield, Project Engineer
Matt Ojala, Project Manager
3000 Rockefeller Ave
Everett, WA 98201 - 4046
425-388-3488 ext. 4549

SWPPP Preparation Date
December 2013

Approximate Project Construction Dates
April 2015 – December 2015

Contents

1.0 Introduction.....	3
2.0 Site Description	4
2.1 Existing Conditions	4
2.2 Proposed Construction Activities	5
3.0 Construction Stormwater BMPs	7
3.1 The 12 BMP Elements	7
3.1.1 Element #1 – Mark Clearing Limits.....	7
3.1.2 Element #2 – Establish Construction Access	7
3.1.3 Element #3 – Control Flow Rates.....	7
3.1.4 Element #4 – Install Sediment Controls	8
3.1.5 Element #5 – Stabilize Soils.....	8
3.1.6 Element #6 – Protect Slopes.....	9
3.1.7 Element #7 – Protect Drain Inlets.....	9
3.1.8 Element #8 – Stabilize Channels and Outlets	10
3.1.9 Element #9 – Control Pollutants.....	10
3.1.10 Element #10 – Control Dewatering	11
3.1.11 Element #11 – Maintain BMPs	11
3.1.12 Element #12 – Manage the Project	11
3.2 Site Specific BMPs.....	13

Appendix A Site plans

- Vicinity map
- Site plan with TESC measures

Appendix B Construction BMPs

- Details of BMPs and/or Standard Drawings

Appendix C Alternative Construction BMP list

- List of BMPs not selected, but can be referenced if needed

Appendix D Site Inspection Form

1.0 Introduction

Project Description

This Stormwater Pollution Prevention Plan (SWPPP) has been prepared for the Wellington Hills – 240th St SE Improvement project in Snohomish County, Washington. The project site is 240th St SE from Snohomish-Woodinville Rd to 75th Ave SE. The proposed improvements include widening the intersection of 240th St SE and Snohomish-Woodinville Rd to 3 lanes consisting of a 14' eastbound lane, 14' left/thru lane and a 10' wide right turn northbound lane. East of the intersection, the two lane roadway will be widened to two 14' lanes up to the Wellington Hills County Park's proposed roundabout. Along 240th St SE within the Park, traffic calming devices are proposed. East of the Park to 75th Ave SE, a 5' wide walkway is proposed along the south side of the 240th St SE. See Appendix E – Proposed Improvements (60% Plans) for the proposed improvements.

Construction activities will include installation of erosion control, excavation, grading, sawcutting, relocation of onsite services/utilities, paving, and mitigation planting. The purpose of this SWPPP is to describe the proposed construction activities and all temporary and permanent erosion and sediment control (TESC) measures, pollution prevention measures, inspection/monitoring activities, and recordkeeping that will be implemented during the proposed construction project. The objectives of the SWPPP are to:

1. Implement Best Management Practices (BMPs) to prevent erosion and sedimentation, and to identify, reduce, eliminate or prevent stormwater contamination and water pollution from construction activity.
2. Prevent violations of surface water quality, ground water quality, or sediment management standards.
3. Prevent, during the construction phase, adverse water quality impacts including impacts on beneficial uses of the receiving water by controlling peak flow rates and volumes of stormwater runoff at the Permittee's outfalls and downstream of the outfalls.

2.0 Site Description

2.1 Existing Conditions

The existing 240th St SE roadway is best characterized as an urban collector arterial with a width of approximately 22' and developer improved sidewalk, curb, gutter and enclosed storm drainage system on the west end of the project. East of the Park boundary, the roadway transitions to a rural minor collector arterial with a width of 20' and roadside drainage ditches. The roadway longitudinal slope varies up to 20% with a superelevation of up to 11%.

Sewall Wetland Consulting, Inc. conducted on-site investigation for Parks, revealing three streams and nine wetlands in close proximity to the Parks project.

Of the nine wetlands, wetland J, a Category IV wetland, is within the project limits for the roadway portion of the project. Wetland J is located on the north side of 240th St SE, on the west side of the existing golf course. Drainage from just north of wetland J slopes down to the wetland, where drainage interflows with existing roadway drainage.

Vegetation in undeveloped areas (as identified by Sewall Wetland Consultants, Inc) is dominated by salmonberry (*Rubus spectabilis*), indian plum (*Oemleria cerasiformis*), sword fern (*Polystichum manitum*), red elderberry (*Sambucus racemosa pubens*), stinging nettle (*Urtica dioica*), bracken fern (*Pteridium aquilinum*), hazelnut (*Corylus cornuta*), big leaf maple (*Acer macrophyllum Pursh*), douglas fir (*Pseudotsuga menziesii*), western hemlock (*Tsuga heterophylla*), and western red cedar (*Thuja plicatum*).

Project stormwater flows from the project site west under the railroad tracks via an existing pipe network, northward along the east side of Snohomish-Woodinville Rd until entering a westerly pipe system traveling through the Woodinville Costco. This pipe system outlets via a submerged 12" pipe on the east side of SR 522 before flowing in a meandering ditch to a 24" corrugated polyethylene culvert, crossing under SR 522, combining with flows from Little Bear Creek.

Soil Types

Surficial geology of the project area has been mapped by the USGS and is shown partially on the "Geologic Map of the Bothell Quadrangle, Snohomish and King Counties, WA" by J.P. Minard dated 1985. Surficial soil types mapped in the general vicinity of the project area is typical for glaciated locations within Snohomish County.

The primary mapped SCS soils classification from the project site are Alderwood gravelly sandy loam, 2 to 8 percent and 8 to 15 percent. These soils have a permeability of 2 to 6 inches per hour.

Based on the Critical Aquifer Recharge Area/Wellhead Protection Map the project site is located approximately 0.40 miles southwest of the critical aquifer recharge area designated as the Cross Valley Sole Source Aquifer.

A preliminary geotechnical investigation has determined soils on the southeast corner of Snohomish-Woodinville Rd and 240th St SE may be suitable for an infiltration facility. These soils, found 8' below ground surface, have a preliminary infiltration rate of 2 in/hr. Groundwater was not encountered at an excavation limit of 13'. A Geotechnical Report summarizing the investigation and recommendations is being prepared by the Snohomish County Geotechnical Group.

2.2 Proposed Construction Activities

The proposed improvements include the roadway widening with the addition of curb and sidewalk on the north side of the roadway. Utility relocation work will occur prior to road construction.

Construction activities will include site preparation, TESC installation, sawcutting, structure excavation, construction of storm drain systems, site grading, landscaping and asphalt paving. The schedule and phasing of BMPs during construction is provided in Section 4.0.

A storm drainage system will convey runoff through the project, to be outlet at existing ditches, streams or storm drain systems. Conveyance design will meet the requirements of the current edition of the Snohomish County Engineering Design and Development standards (EDDS).

The following summarizes details regarding site areas:

▪ Total site area:	3.39 acres
▪ Percent impervious area before construction:	48 %
▪ Percent impervious area after construction:	60 %
▪ Disturbed area during construction:	1.16 acres
▪ Disturbed area that is characterized as impervious (i.e., access roads, staging, parking):	0.62 acres

Anticipated construction sequence will start with:

- Mark project area and clearing limits
- Installation of all erosion control devices

- Construction of project storm drainage
- Roadway grading
- Stabilizing project slopes
- Installation of curb and sidewalk
- Seeding side slopes as weather allows
- Planing Bituminous Pavement
- Project Paving
- Filterra Unit Activation
- Project Striping
- General Project Cleanup and removal of erosion control

3.0 Construction Stormwater BMPs

3.1 The 12 BMP Elements

The following BMPs are presented to demonstrate that all of the twelve elements of the SWPPP are accounted for in the Temporary Erosion and Sediment Control Plan.

Alternate BMPs for meeting the conditions of the NPDES permits are included in Appendix C as a quick reference tool for the onsite inspector in the event the BMP(s) listed in this section are deemed ineffective or inappropriate during construction. The Certified Erosion and Sediment Control Lead will promptly initiate the implementation of one or more of the alternative BMPs listed in Appendix C after the first sign that existing BMPs are ineffective or failing.

3.1.1 Element #1 – Mark Clearing Limits

To protect adjacent properties and to reduce the area of soil exposed to construction, the limits of construction will be clearly marked before land-disturbing activities begin. Trees that are to be preserved, as well as all sensitive areas and their buffers, shall be clearly delineated, both in the field and on the plans. In general, natural vegetation and native topsoil shall be retained in an undisturbed state to the maximum extent possible.

The BMPs relevant to marking the clearing limits that will be applied for this project include:

BMP C101: Preserving Natural Vegetation
BMP C103: High Visibility Plastic or Metal Fence

3.1.2 Element #2 – Establish Construction Access

Construction access or activities occurring on unpaved areas shall be minimized, yet where necessary, access points shall be stabilized to minimize the tracking of sediment onto public roads, and wheel washing, street sweeping, and street cleaning shall be employed to prevent sediment from entering state waters. All wash wastewater shall be controlled on site.

The specific BMPs related to establishing construction access and/or handling sediment tracking that will be used on this project include:

BMP C105: Stabilized Construction Entrance
BMP C107: Construction Road/Parking Area Stabilization

3.1.3 Element #3 – Control Flow Rates

In order to protect the properties and waterways downstream of the project site, stormwater discharges from the site will be controlled.

The specific BMPs for flow control that shall be used on this project include:

BMP C240: Sediment Trap

3.1.4 Element #4 – Install Sediment Controls

All stormwater runoff from disturbed areas shall pass through an appropriate sediment removal BMP before leaving the construction site or prior to being discharged to an infiltration facility.

The specific BMPs to be used for controlling sediment on this project as required to meet permitted turbidity limits in the site discharge(s) include:

BMP C232: Gravel Filter Berm

BMP C233: Silt Fence

BMP C234: Vegetated Strip

BMP C240: Sediment Trap

After the use of these sediment sources, erosion control and soil stabilization BMP efforts have been maximized, the specific BMPs implemented as end-of-pipe sediment controls include:

BMP C251: Construction Stormwater Filtration

In some cases, sediment discharge in concentrated runoff can be controlled using permanent stormwater BMPs (e.g., infiltration swales, ponds, trenches). Sediment loads can limit the effectiveness of some permanent stormwater BMPs, such as those used for infiltration or biofiltration; however, those BMPs designed to remove solids by settling (wet ponds or detention ponds) can be used during the construction phase. When permanent stormwater BMPs will be used to control sediment discharge during construction, the structure will be protected from excessive sedimentation with adequate erosion and sediment control BMPs. Any accumulated sediment shall be removed after construction is complete and the permanent stormwater BMP will be restabilized with vegetation per applicable design requirements once the remainder of the site has been stabilized.

3.1.5 Element #5 – Stabilize Soils

Exposed and unworked soils shall be stabilized with the application of effective BMPs to prevent erosion throughout the life of the project.

The project site is located west of the Cascade Mountain Crest. As such, no soils shall remain exposed and unworked for more than 7 days during the dry season (May 1 to September 30) and 2 days during the wet season (October 1 to April 30). Regardless of

the time of year, all soils shall be stabilized at the end of the shift before a holiday or weekend if needed based on weather forecasts.

In general, cut and fill slopes will be stabilized as soon as possible and soil stockpiles will be temporarily covered with plastic sheeting. All stockpiled soils shall be stabilized from erosion, protected with sediment trapping measures, and where possible, be located away from storm drain inlets, waterways, and drainage channels.

The specific BMPs for soil stabilization that shall be used on this project include:

BMP C120: Temporary and Permanent Seeding
BMP C121: Mulching
BMP C122: Nets and Blankets
BMP C123: Plastic Covering
BMP C124: Sodding
BMP C125: Topsoiling
BMP C140: Dust Control

3.1.6 Element #6 – Protect Slopes

All cut and fill slopes will be designed, constructed, and protected in a manner than minimizes erosion. Soil types and slopes will be taken into consideration.

The following specific BMPs will be used to protect slopes for this project:

BMP C120: Temporary and Permanent Seeding
BMP C130: Surface Roughening
BMP C200: Interceptor Dike and Swale
BMP C201: Grass-Lined Channels
BMP C204: Pipe Slope Drains
BMP C205: Subsurface Drains
BMP C206: Level Spreader
BMP C207: Check Dams
BMP C208: Triangular Silt Dike (Geotextile-Encased Check Dam)

3.1.7 Element #7 – Protect Drain Inlets

All storm drain inlets and culverts made operable during construction shall be protected to prevent unfiltered or untreated water from entering the drainage conveyance system. However, the first priority is to keep all access roads clean of sediment and keep street wash water separate from entering storm drains until treatment can be provided. Storm Drain Inlet Protection (BMP C220) will be implemented for all drainage inlets and culverts that could potentially be impacted by sediment-laden runoff on and near the project site.

The following inlet protection measures will be applied on this project:

S:\PW_Project_Data_Management\6-PROJECTS\UPI	Year_2012\12-0059-1\3	RESOURCE
GROUPS_WorksInProgress\Design	Teams	Project
(2DSGN)\Drainage\SWPPP_240th.docx	9	Data

BMP C220: Storm Drain Inlet Protection

3.1.8 Element #8 – Stabilize Channels and Outlets

Where site runoff is to be conveyed in channels, or discharged to a stream or some other natural drainage point, efforts will be taken to prevent downstream erosion.

The specific BMPs for channel and outlet stabilization that shall be used on this project include:

BMP C202: Channel Lining
BMP C209: Outlet Protection

3.1.9 Element #9 – Control Pollutants

All pollutants, including waste materials and demolition debris, that occur onsite shall be handled and disposed of in a manner that does not cause contamination of stormwater. Good housekeeping and preventative measures will be taken to ensure that the site will be kept clean, well organized, and free of debris.

If required, BMPs to be implemented to control specific sources of pollutants are discussed below.

Vehicles, construction equipment, and/or petroleum product storage/dispensing:

- All vehicles, equipment, and petroleum product storage/dispensing areas will be inspected regularly to detect any leaks or spills, and to identify maintenance needs to prevent leaks or spills.
- On-site fueling tanks and petroleum product storage containers shall include secondary containment.
- Spill prevention measures, such as drip pans, will be used when conducting maintenance and repair of vehicles or equipment.
- In order to perform emergency repairs on site, temporary plastic will be placed beneath and, if raining, over the vehicle.
- Contaminated surfaces shall be cleaned immediately following any discharge or spill incident.

Excavation and tunneling spoils dewatering waste:

- Dewatering BMPs and BMPs specific to the excavation and tunneling (including handling of contaminated soils) are discussed under Element 10.

Demolition:

- Dust released from demolished sidewalks, buildings, or structures will be controlled using Dust Control measures (BMP C140).
- Storm drain inlets vulnerable to stormwater discharge carrying dust, soil, or debris will be protected using Storm Drain Inlet Protection (BMP C220 as described above for Element 7).
- Process water and slurry resulting from sawcutting and surfacing operations will be prevented from entering the waters of the State by implementing Sawcutting and Surfacing Pollution Prevention measures (BMP C152).

Concrete and grout:

- Process water and slurry resulting from concrete work will be prevented from entering the waters of the State by implementing Concrete Handling measures (BMP C151).

3.1.10 Element #10 – Control Dewatering

All dewatering water from open cut excavation, tunneling, foundation work, trench, or underground vaults shall be discharged into a controlled conveyance system prior to discharge to a sediment trap or sediment pond. Channels will be stabilized, per Element #8. Clean, non-turbid dewatering water will not be routed through stormwater sediment ponds, and will be discharged to systems tributary to the receiving waters of the State in a manner that does not cause erosion, flooding, or a violation of State water quality standards in the receiving water. Highly turbid dewatering water from soils known or suspected to be contaminated, or from use of construction equipment, will require additional monitoring and treatment as required for the specific pollutants based on the receiving waters into which the discharge is occurring. Such monitoring is the responsibility of the contractor. However, the dewatering of soils known to be free of contamination will trigger BMPs to trap sediment and reduce turbidity.

3.1.11 Element #11 – Maintain BMPs

All temporary and permanent erosion and sediment control BMPs shall be maintained and repaired as needed to assure continued performance of their intended function. Maintenance and repair shall be conducted in accordance with each particular BMP's specifications. Visual monitoring of the BMPs will be conducted at least once every calendar week and within 24 hours of any rainfall event that causes a discharge from the site. If the site becomes inactive, and is temporarily stabilized, the inspection frequency will be reduced to once every month.

All temporary erosion and sediment control BMPs shall be removed within 30 days after the final site stabilization is achieved or after the temporary BMPs are no longer

needed. Trapped sediment shall be removed or stabilized on site. Disturbed soil resulting from removal of BMPs or vegetation shall be permanently stabilized.

3.1.12 Element #12 – Manage the Project

Erosion and sediment control BMPs for this project have been designed based on the following principles:

- Design the project to fit the existing topography, soils, and drainage patterns.
- Emphasize erosion control rather than sediment control.
- Minimize the extent and duration of the area exposed.
- Keep runoff velocities low.
- Retain sediment on site.
- Thoroughly monitor site and maintain all ESC measures.
- Schedule major earthwork during the dry season.

Phasing of Construction

- The construction project is being phased to the extent practicable in order to prevent soil erosion, and, to the maximum extent possible, the transport of sediment from the site during construction.

Inspection and Monitoring

- All BMPs shall be inspected, maintained, and repaired as needed to assure continued performance of their intended function. Site inspections shall be conducted by a person who is knowledgeable in the principles and practices of erosion and sediment control. This person has the necessary skills to:
 - ☐ Assess the site conditions and construction activities that could impact the quality of stormwater, and
 - ☐ Assess the effectiveness of erosion and sediment control measures used to control the quality of stormwater discharges.
- A Certified Erosion and Sediment Control Lead shall be on-site or on-call at all times.
- Whenever inspection and/or monitoring reveals that the BMPs identified in this SWPPP are inadequate, due to the actual discharge of or potential to discharge a significant amount of any

pollutant, appropriate BMPs or design changes shall be implemented as soon as possible.

Maintaining an Updated Construction SWPPP

- This SWPPP shall be retained on-site or within reasonable access to the site.
- The SWPPP shall be modified whenever there is a change in the design, construction, operation, or maintenance at the construction site that has, or could have, a significant effect on the discharge of pollutants to waters of the state.
- The SWPPP shall be modified if, during inspections or investigations conducted by the owner/operator, or the applicable local or state regulatory authority, it is determined that the SWPPP is ineffective in eliminating or significantly minimizing pollutants in stormwater discharges from the site. The SWPPP shall be modified as necessary to include additional or modified BMPs designed to correct problems identified. Revisions to the SWPPP shall be completed within seven (7) days following the inspection.

3.2 Site Specific BMPs

Site specific BMPs are shown on the TESC Plan Sheets in Appendix A and in the details and/or standard drawings in Appendix B.

Stormwater Design Calculations may be found within the Drainage Report.

Appendix B – Construction BMPs

BMP C101: Preserving Natural Vegetation
BMP C103: High Visibility Plastic or Metal Fence
BMP C105: Stabilized Construction Entrance
BMP C107: Construction Road/Parking Area Stabilization
BMP C120: Temporary and Permanent Seeding
BMP C121: Mulching
BMP C122: Nets and Blankets
BMP C123: Plastic Covering
BMP C124: Sodding
BMP C125: Topsoiling
BMP C130: Surface Roughening
BMP C140: Dust Control
BMP C151: Concrete Handling measures
BMP C152: Sawcutting and Surfacing Pollution Prevention measures
BMP C200: Interceptor Dike and Swale
BMP C201: Grass-Lined Channels
BMP C202: Channel Lining
BMP C204: Pipe Slope Drains
BMP C205: Subsurface Drains
BMP C206: Level Spreader
BMP C207: Check Dams
BMP C208: Triangular Silt Dike (Geotextile-Encased Check Dam)
BMP C209: Outlet Protection
BMP C220: Storm Drain Inlet Protection
BMP C232: Gravel Filter Berm
BMP C233: Silt Fence
BMP C234: Vegetated Strip
BMP C240: Sediment Trap
BMP C251: Construction Stormwater Filtration

Appendix C – Alternative BMPs

The following includes a list of possible alternative BMPs for this project. This list can be referenced in the event a BMP for a specific element is not functioning as designed and an alternative BMP needs to be implemented.

Element #4 – Install Sediment Controls

Temporary Media Filters (i.e., Baker Tanks)

BMP C230: Straw Bale Barrier

BMP C231: Brush Barrier

BMP C235: Straw Wattles

BMP C241: Temporary Sediment Pond

BMP C250: Construction Stormwater Chemical Treatment
(implemented only with prior written approval from Ecology)

Element #5 – Stabilize Soils

BMP C126: Polyacrylamide for Soil Erosion Protection

BMP C131: Gradient Terraces

Element #6 – Protect Slopes

BMP C131: Gradient Terraces

Appendix D – Site Inspection Form

The results of each inspection shall be summarized in an inspection report or checklist that is entered into or attached to the site log book. It is suggested that the inspection report or checklist be included in this appendix to keep monitoring and inspection information in one document, but this is optional. However, it is mandatory that this SWPPP and the site inspection forms be kept onsite at all times during construction, and that inspections be performed and documented as outlined below.

At a minimum, each inspection report or checklist shall include:

- a. Inspection date/times
- b. Weather information: general conditions during inspection, approximate amount of precipitation since the last inspection, and approximate amount of precipitation within the last 24 hours.
- c. A summary or list of all BMPs that have been implemented, including observations of all erosion/sediment control structures or practices.
- d. The following shall be noted:
 - i. locations of BMPs inspected,
 - ii. locations of BMPs that need maintenance,
 - iii. the reason maintenance is needed,
 - iv. locations of BMPs that failed to operate as designed or intended, and
 - v. locations where additional or different BMPs are needed, and the reason(s) why
- e. A description of stormwater discharged from the site. The presence of suspended sediment, turbid water, discoloration, and/or oil sheen shall be noted, as applicable.
- f. A description of any water quality monitoring performed during inspection, and the results of that monitoring.
- g. General comments and notes, including a brief description of any BMP repairs, maintenance or installations made as a result of the inspection.
- h. A statement that, in the judgment of the person conducting the site inspection, the site is either in compliance or out of compliance with the terms and conditions of the SWPPP. If the site inspection indicates that the site is out of compliance, the inspection report shall include a summary of the remedial actions required to bring the site back into compliance, as well as a schedule of implementation.
- i. Name, title, and signature of person conducting the site inspection; and the following statement: "I certify under penalty of law that this report is true, accurate, and complete, to the best of my knowledge and belief".

When the site inspection indicates that the site is not in compliance with any terms and conditions of permits, the Owner/Operator shall take immediate action(s) to: stop, contain, and clean up the unauthorized discharges, or otherwise stop the noncompliance; correct the problem(s); implement appropriate Best Management Practices (BMPs), and/or conduct maintenance of existing BMPs;

and achieve compliance with all applicable standards and permit conditions. In addition, if the noncompliance causes a threat to human health or the environment, the Permittee shall comply with the Noncompliance Notification requirements in section 7.2.2.

**Construction Stormwater
SITE INSPECTION CHECKLIST**

Project _____ Permit No. _____ Inspector _____ Date _____ Time _____

Site BMPs	Overall Condition			Need Repair?		Comments/Observations
Clearing Limits						
• Buffer Zones around sensitive areas	G	F	P	Y	N	
•	G	F	P	Y	N	
•	G	F	P	Y	N	
Construction Access/Roads						
• Stabilized site entrance	G	F	P	Y	N	
• Stabilized roads/parking area	G	F	P	Y	N	
•	G	F	P	Y	N	
Control Flow Rates						
• Swale	G	F	P	Y	N	
• Dike	G	F	P	Y	N	
• Sediment pond	G	F	P	Y	N	
• Sediment trap	G	F	P	Y	N	
•	G	F	P	Y	N	
•	G	F	P	Y	N	
Install Sediment Controls						
• Sediment pond/trap	G	F	P	Y	N	
• Silt fence	G	F	P	Y	N	
• Straw bale barriers	G	F	P	Y	N	
•	G	F	P	Y	N	
•	G	F	P	Y	N	
•	G	F	P	Y	N	
Preserve Vegetation/Stabilize Soils						
• Nets and blankets	G	F	P	Y	N	
• Mulch	G	F	P	Y	N	
• Seeding	G	F	P	Y	N	
•	G	F	P	Y	N	
•	G	F	P	Y	N	
Protect Slopes						
• Terrace	G	F	P	Y	N	
• Pipe slope drains	G	F	P	Y	N	
•	G	F	P	Y	N	
•	G	F	P	Y	N	
Protect Drain Inlets						
• Inserts	G	F	P	Y	N	
•	G	F	P	Y	N	
•	G	F	P	Y	N	
Stabilize Channels and Outlets						
• Conveyance channels	G	F	P	Y	N	
• Energy dissipators	G	F	P	Y	N	
•	G	F	P	Y	N	
Control Pollutants						
• Chemical Storage Area covered	G	F	P	Y	N	
• Concrete handling	G	F	P	Y	N	
•	G	F	P	Y	N	
Control De-watering						
•	G	F	P	Y	N	

G=Good F=Fair P=Poor Y=Yes N=No

**Construction Stormwater
SITE INSPECTION CHECKLIST**

Project _____ Permit No. _____ Inspector _____ Date _____ Time _____

Will existing BMPs need to be modified or removed, or other BMPs installed? YES NO
IF YES, list the action items to be completed on the following table:

Actions to be Completed	Date Completed/ Initials
1.	
2.	
3.	
4.	
5.	
6.	

Describe current weather conditions.

Approximate amount of precipitation since last inspection: _____ inches
and precipitation in the past 24 hours*: _____ inches
**based on an on-site rain gauge or local weather data.*

Describe discharging stormwater, if present. Note the presence of suspended sediment, "cloudiness", discoloration, or oil sheen.

Was water quality sampling part of this inspection? YES NO
If yes, record results below (attach separate sheet, if necessary):

Parameter:	Method (circle one)	Result	Units
Turbidity	tube, meter, laboratory		NTU (cm, if tube used)
pH	paper, kit, meter		pH standard units

Is the site in compliance with the SWPPP and the permit requirements? YES NO
If no, indicate tasks necessary to bring site into compliance on the "Actions to be Completed" table above, and include dates each job WILL BE COMPLETED.
If no, has the non-compliance been reported to Dept. of Ecology? YES NO
If no, should the SWPPP be modified: YES NO

Sign the following certification:

"I certify that this report is true, accurate, and complete, to the best of my knowledge and belief."

Inspection completed on: _____ by: (print+signature) _____

Title/Qualification of
Inspector: _____